# MDP-440/640D/740D

## RMT-333E

# SERVICE MANUAL

*AEP Model*

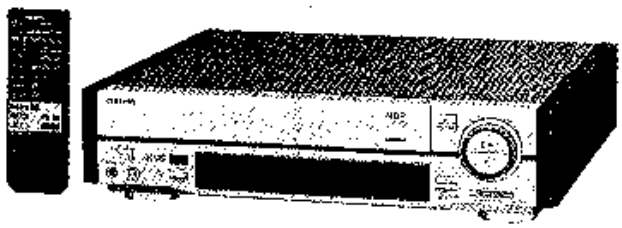

**Photo: MDP-740D**

### SPECIFICATIONS

Type CD/CDV/LD Player
Signal readout Optical (Laser beam reflection)
Signal format CCIR standard, PAL colour system
EIA standard, NTSC colour system

Playing time

| | | | PAL | NTSC |
|---|---|---|---|---|
| LD | CAV | 30 cm (12 in) double-sided | 72 | 60 |
| | | 20 cm (8 in) double-sided | 32 | 28 |
| | | 20 cm (8 in) single-sided | – | 14 |
| | CLV | 30 cm (12 in) double-sided | 120 | 120 |
| | | 20 cm (8 in) double-sided | 40 | 40 |
| | | 20 cm (8 in) single-sided | – | 20 |
| CDV | | Audio portion | 20 | 20 |
| | | Video portion | 6 | 5 |
| CD | | 12 cm (5 in) single-sided | 74 | 74 |
| | | 8 cm (3 in) single-sided | 20 | 20 |

(minutes)

**Digital audio specifications**

Frequency response
4 Hz to 20 kHz (±0.3 dB)
Signal-to-noise ratio
More than 100 dB (EIAJ*)
Dynamic range More than 95 dB (EIAJ*)
Total harmonic distortion
0.003% or less (EIAJ* at 1 kHz)
Channel separation
More than 90 dB (EIAJ* at 1 kHz)
Wow and flutter Below measurement limit
(±0.001% W.PEAK) (EIAJ*)

* Measurement by under condition of standards of Electric Industries Association of JAPAN (VTC-015)

Horizontal video resolution
PAL 440 lines
NTSC 425 lines

— Continued on next page —

- **SERVICE OF REMOTE COMMANDER RMT-333E**

Remote commander RMT-333E is available as a unit. But as individual parts the battery case lid of commander is only available.

MICROFILM

CD VIDEO CD/CDV/LD/PLAYER

SONY®

**Input/output**

Video output 1.0 Vp-p, 75 ohms, unbalanced
RGB output 0.7 Vp-p
Audio output Analog: 200 mVrms (1 kHz, 40% modulation)
Digital: 200 mVrms (1 kHz, 20 dB)
Audio digital output (optical)
−18 dBm, wavelength 660 nm
Headphone output
28 mW (32 ohms), 8 ohms
Power requirements
Model for Continental Europe:
220 V AC, 50/60 Hz
Model for the United Kingdom and Australia:
240 V AC, 50/60 Hz
Power consumption
40 watts
Weight 640D: Approx. 8,6 kg (19 lb)
740D: Approx. 9,6 kg (21 lb 3 oz)
Dimensions 640D: Approx. 430x115x420 mm (w/h/d) (17x4⅝x16⅝ inches)
740D: Approx. 470x115x420 mm (w/h/d) (18⅝x4⅝x16⅝ inches)
Operating temperature
+5°C to +35°C
Ambient humidity 5% to 90%

**Remote Commander RMT-333E**

Remote control system
Infrared control
Power requirements
3 V DC, (2 IEC R6 (size AA) batteries)
Dimensions Approx. 62x44.5x185 mm (w/h/d) (2½x1¾x7⅜ inches)
Weight Approx. 170 g (including batteries) (6 oz)

**Supplied accessories**

Remote Commander RMT-333E (1)
IEC R6 (size AA) batteries (2)

Design and specifications are subject to change without notice.

**SAFETY-RELATED COMPONENT WARNING!!**

**COMPONENTS IDENTIFIED BY MARK ⚠ OR DOTTED LINE WITH MARK ⚠ ON THE SCHEMATIC DIAGRAMS AND IN THE PARTS LIST ARE CRITICAL TO SAFE OPERATION. REPLACE THESE COMPONENTS WITH SONY PARTS WHOSE PART NUMBERS APPEAR AS SHOWN IN THIS MANUAL OR IN SUPPLEMENTS PUBLISHED BY SONY.**

## PROTECTION OF EYES FROM LASER BEAM DURING SERVICING

This set employs a laser. Therefore, be sure to follow carefully the instructions below when servicing.

**WARING!!**

**WHEN SERVICING, DO NOT APPROACH THE LASER EXIT WITH THE EYE TOO CLOSELY. IN CASE IT IS NECESSARY TO CONFIRM LASER BEAM EMISSION, BE SURE TO OBSERVE FROM A DISTANCE OF MORE THAN 25 cm FROM THE SURFACE OF THE OBJECTIVE LENS ON THE OPTICAL PICK-UP BLOCK.**

**DANGER**
Invisible laser radiations when open and interlock failed or defeated.
Avoid direct orwexposure to beam.

CLASS 1 LASER PRODUCT

ADVARSEL:
USYNLIG LASERSTRÅLING VED ÅBNING NÅR SIKKERHEDSAF-BRYDERE ER UD AF FUNCTION UNDGÅ. UDSAETTELSE FOR STRÅLING.

CLASS 3B LASER

VAROITUS!
SUOJAKOTELOA EI SAA AVATA. LAITE SISÄLTÄÄ LASERDIODIN, JOKA LÄHETTÄÄ (NÄKYMÄTÖNTÄ)
SILMILLE VAARALLISTA LASERSÄTEILYÄ.

LASER COMPONENT IN PRODUCT IS CAPABLE OF EMITTING RADIATION EXCEEDING THE LIMIT FOR CLASS 1.

1. Laser Diode Properties
   - Material: GaALAs
   - Wavelength: 780nm
   - Emission Duration: continuous
2. During service, do not take the Optical Pick-up Block apart, and do not adjust the APC circuit. If there is a berakdown in the APC circuit (including laser diode), replace the entire Optcal Pick-up Block (including APC board).

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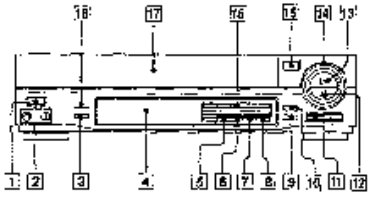
This section is extracted from instruction manual.

SECTION 1
GENERAL

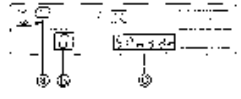
# Location and Function of Parts and Controls

Refer to the page indicated in the black circle for details.

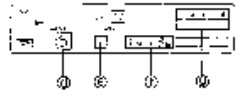
A-1



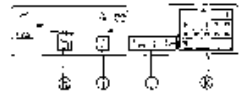

A-2



A-3



A-4



## Front Panel

A-1

**Buttons on the Remote Commander have the same functions as those on the main unit.**

1 **Power switch**
Press to turn on and press again to turn off the player.

2 **PHONES jack (stereo phone type) and LEVEL control**
When listening with headphones, connect the headphones with stereo phone plug here. Adjust the volume with the LEVEL control.

3 **RGB selector**
When the player is connected to the TV via the EUROCONNECTOR, set to ON to view an NTSC disc on a PAL TV. The TV can be set to receive the RGB signal.
When your TV is equipped with the RGB or composite signal selector, setting the TV to receive the RGB signal may be performed on the TV itself.
Set to OFF when your TV is capable of receiving both PAL and NTSC.

**Notes**

- When the TV is set to the RGB mode, the picture brightness may change.
  In this case, adjust the brightness on the TV.
- When this selector is set to ON, the picture may shift slightly to the left.

4 **Display window**
When playing back a disc, the following indications appear on the display.

A-2

LD
- ⑤ Type of LD
- ⑥ Chapter number
- ⑦ Time (hr./min./sec.) or frame number

A-3

CDV
- ⑧ Track number
- ⑨ Index
- ⑩ Elapsed time (min./sec.) for track
- ⑪ AV calendar

A-4

CD
- ⑫ Track number
- ⑬ Index
- ⑭ Elapsed time (min./sec.) for track
- ⑮ AV calendar

5 **AUTO PBC button**

6 **AV TIME button**
Press to change time display

7 **FILE button**
Use this button for setting a custom index mark.

8 **CUSTOM INDEX button**
Use this button for custom index search.

9 **Repeat button**
Press to repeat the entire disc side.

10 **Stop button**

11 **ACS/AMS ⏮/⏭ (Automatic Chapter Select/Music Sensor) buttons**
Use these buttons for skipping chapter/track.

12 **Pause button**

13 **Play button**

14 **Shuttle ring**
Utilize for forward or reverse speed scan.

15 **Disc tray OPEN/CLOSE button**
Press to open or close the disc tray.

16 **Number/file search (1-9/A-F) buttons**
These are used for entering program, chapter, track, frame, time numbers and File A-F.

17 **Disc tray**

18 **Remote control sensor**
Point the supplied Remote Commander here.

## Accessories

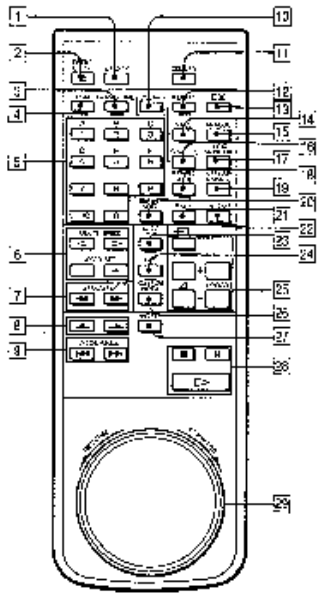
The following accessories are included in the carton.

RMT-333E Remote Commander

Two IEC R6 (size AA) batteries

## Remote Commander

B-1



The yellow bar under a button indicates that the function of that button can be released by pressing the CLEAR button.

B-1

Buttons on the Remote Commander have the same functions as those on the main unit.

1 **DISC/TV button**
When the player is connected to the TV via the EURO CONNECTOR, press to monitor TV programmes. Press again to return to disc viewing.

2 **⏏ Disc tray OPEN/CLOSE button**
Press to open or close the disc tray.

3 **FRAME/TIME search button**

4 **PGM (program play) button**

5 **Number/file search (1 – 9/A – F) buttons**
These are used for entering program, chapter, track, frame, time numbers and File A - F.

6 **</> MULTI SPEED buttons**
**+/– SPEED SET buttons**

7 **⏮/▮▮/⏭ STILL/STEP buttons**

8 **—/— Index buttons**
While playing back a CD, press — to advance the index, or — to revert it.

9 **⏮/⏭ ACS/AMS (Automatic Chapter Select/Music Sensor) buttons**

10 **CLEAR button**
Press to cancel a wrong numerical entry or to terminate the search or other function currently in operation. (The functions affected are marked on the Remote Commander with yellow underlines.)

11 **DISPLAY button**
Press during playback to superimpose the screen messages (see page 13) on the monitor screen. Press again to remove the message.

12 **REPEAT button**
Press to repeat the entire disc side, and for other repeat play.

13 **CX button**
Press to manually activate the CX noise reduction system.

14 **1/ALL button**
Press to repeat the single track or chapter.

15 **ANALOG audio button**
Use this button to switch between digital and analog sound on an LD or NTSC video signal system.

16 **SHUFFLE button**
Press to play back selections on a CD, CDV, and LD with TOC in random order.

17 **AUDIO MONITOR button**
Press to switch the audio channels of a disc in the order of stereo, 1/L, and 2/R.

18 **REPEAT A ↔ B button**
Press to repeat the particular portion.

19 **A.(Automatic) PAUSE/A. (Automatic) SPACE button**

20 **SEARCH/NEXT button**

21 **BACK button**

22 **AV TIME button**
Press to change time display.

23 **AUTO PGM button**

24 **FILE button**
Use this button for setting a custom index mark.

25 **TV operation buttons**
(Can be used to control Sony TV sets bearing the ■ mark.)
PROG+ (program) +/– buttons
(volume) —/+ buttons
⏻ button
Press to switch to a video equipment connected to the video/audio inputs of the TV set. (This function is available only with certain TV models.)

26 **CUSTOM INDEX button**
Use this button for custom index search.

27 **INTRO (introduction) scan button**

28 **Basic operation buttons**
■ STOP button
▮▮ PAUSE button
▷ PLAY button

29 **Shuttle ring**
Utilize for forward or reverse speed scan.

### Precaution on the Remote Commander

Do not let strong sunlight or a strong artificial light source shine directly on the remote sensor, as it may interfere with the operation or damage the sensor.

### Installing batteries

1 Open the lid.

2 Insert the two R6 (size AA) batteries with correct polarity.

### Battery life

Batteries should last for about six months under normal operating conditions. When the operating range of the Remote Commander becomes noticeably short, replace the batteries with new ones.

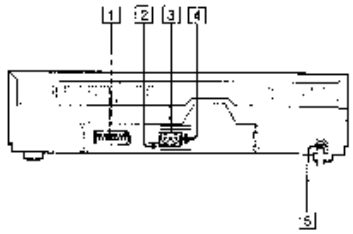
### Note

When the Remote Commander is not to be used for a long period of time, remove the batteries to avoid possible damage from battery leakage.

## Location and Function of Parts and Controls

### Rear Panel

C-1




C-1

1 **EUROCONNECTOR** (21 pin) ❶
Connect to the 21-pin connector of a VTR or a TV, or to the audio/video input of these units with a commercially available connecting cable.

2 **DIGITAL OUT connector** ❷
This jack permits optical fiber connection to an amplifier or D/A converter unit with optical input. For connection, use the optional audio fiber cable FOC-15. (OPTICAL)

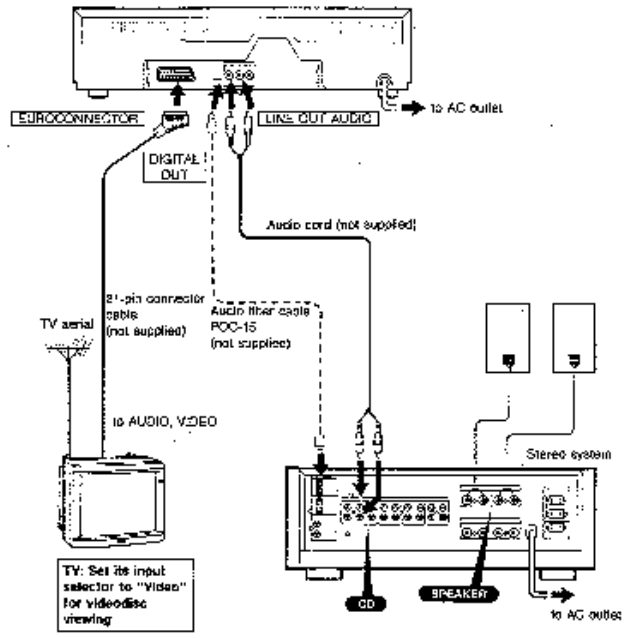
3 **LINE OUT AUDIO L, R jacks** (phono jacks) ❸
Connect to the audio input jacks of a TV set or the CD input jacks of an amplifier. The output signal is the same – that is, digital or analog – as that recorded on the disc.

4 **LINE OUT VIDEO jack** (phono jack) ❹
Connect to the video input jack of a TV set or a VTR.

5 **AC power cord**



## To Connect to Audio System and to TV with Audio/Video Inputs and EUROCONNECTOR



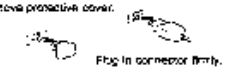

**Notes**

- Press the DISC/TV button to monitor TV programs, and press again to view the picture of a disc.
- To view an NTSC disc, connect to the RGB input connector on TV. For details, refer to the operating instructions of TV.

**Connection precautions**

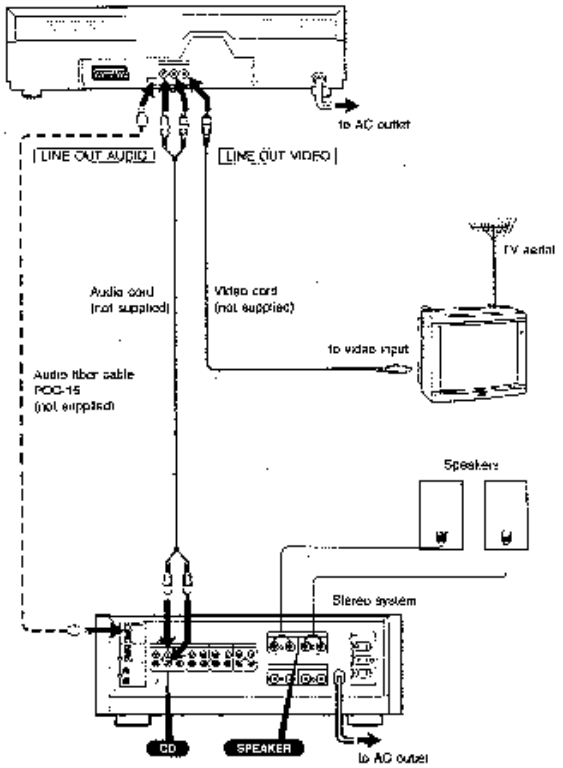
- Make sure that all equipment is OFF before connecting or disconnecting any cables.
- Check the colour of the plugs: yellow indicates video; white, left audio channel; red, right audio channel.
- Firmly insert the plugs into the jacks. A loose connection can lead to noise.
- When unplugging a cable, grasp the plug. Never pull by the cable.
- To prevent interference, turn off all equipment that is connected, but not currently in use.
- If there is noise in the audio or video output, try moving the equipment further apart.
- Connection methods differ. When in doubt, consult the manufacturer's manual.

Connection of optical fiber cable
Remove protective cover.



Plug in connector firmly.

# To Connect to Audio System and TV with Audio/Video Inputs




**Note**

When playing an NTSC disc, the picture may be abnormal on some types of TV.

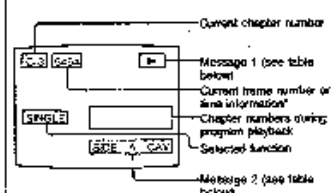




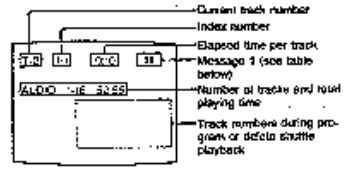
# Screen Messages

Information on the operating condition of the unit and chapter or track numbers can be superimposed on the TV or monitor screen. While no image is displayed, such as during search, information while playing back a PAL disc and a CD is shown on a blue background and information while playing back an NTSC disc is shown on a green background.

**LD**

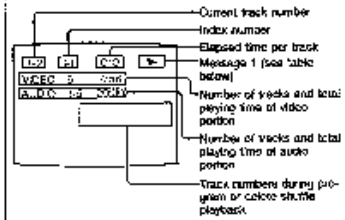

Current chapter number
Message 1 (see table below)
Current frame number or time information*
Chapter numbers during program playback
Selected function
Message 2 (see table below)

**CD**


Current track number
Index number
Elapsed time per track
Message 1 (see table below)
Number of tracks and total playing time
Track numbers during program or before shuttle playback

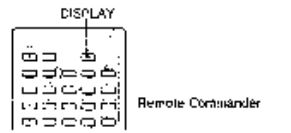
* If seconds are not recorded on the disc, only "0'22" is shown.

**CDV**


Current track number
Index number
Elapsed time per track
Message 1 (see table below)
Number of tracks and total playing time of video portion
Number of tracks and total playing time of audio portion
Track numbers during program or before shuttle playback

**To turn on the screen message**

Press DISPLAY button.




Press the button again to turn the message off.

**Message 1** (Examples)

| Display | Explanation |
|---|---|
| OPEN | Disc tray open |
| CLOSE | Disc tray close |
| ▶ | Playback |
| ■ | Stop |
| II | Pause |
| ◀◀/▶▶ | Forward/reverse speed scan |
| SEARCH | Search |
| ▶ ×1/2 | 1/2 speed display in forward direction |

**Message 2** (Examples)

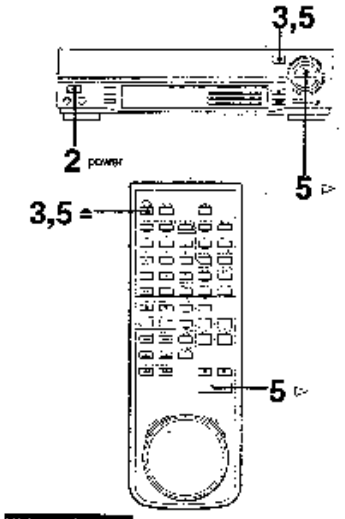
| Display | Explanation |
|---|---|
| SIDE A CAV | Standard-play disc side A |
| SIDE B CAV | Standard-play disc side B |
| SIDE A CLV | Extended-play disc side A |
| SIDE B CLV | Extended-play disc side B |
| 1/L | Main soundtrack/left channel |
| 2/R | Second soundtrack/right channel |
| 1 DIGITAL | Digital sound |
| 2 ANALOG | Analog sound |

**LD precaution**

Some discs do not contain the side A or B identification code. In this case, the disc side indication may not be correct.

# To Play a Disc

## Starting Playback




**Notes on disc tray**

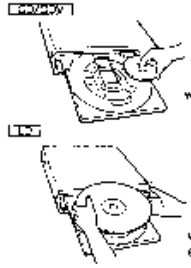
- Insert only one disc at a time.
- Make sure that the disc is placed properly in the tray. Improper positioning may result in permanent damage to the disc.

1 **Turn on the TV and stereo system.**
**TV:** Select the video input. (See page 11.)
**Stereo system:** Turn on the amplifier or the receiver and select the proper audio input.

2 **Press POWER to turn on the player.**

3 **Press ≜ OPEN/CLOSE to open the disc tray.**

4 **Place the disc on the tray.**
Place the disc on the center of the tray. If the disc is not placed correctly, playback may not start.



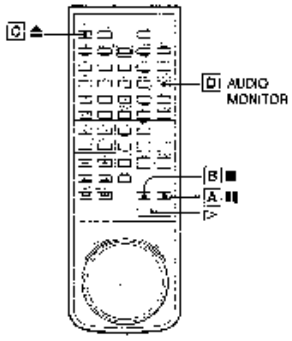

5 **Press ▷ (Play) to start playback.**
CDV: Playback starts from the video portion.

**Using an optional timer**
To automatically start playback with an optional timer, leave the POWER switch of the disc player in the de-pressed position. When the timer supplies power at the preset time, the unit turns on and playback starts.

**To pause at the beginning of a disc**
Press **II** on the player or the Remote Commander. The tray closes, and the player pauses at the beginning of the disc.

**AV calendar**
When playing a CD, CDV, or an LD containing TOC (Table of Contents) data, the AV calendar shows information on the total number of tracks or chapters. As tracks or chapters are played, the corresponding numbers on the display go out.

## Advanced Playback




**To temporarily interrupt playback** A

**Press II (pause).**
When playing CAV discs, the sound is cut off and a still picture is shown.
When playing other discs, the unit enters the pause condition. To resume play from the same point, press ▷.

**To stop playback** B

**Press ■ (stop).**
To restart playback from the beginning of the disc, press ▷.

**To stop playback and remove the disc** C

**Press ≜ OPEN/CLOSE.**
Remove the disc and press ≜ OPEN/CLOSE to close the tray.

**To play a stereo or a second audio program (SAP) LD** D

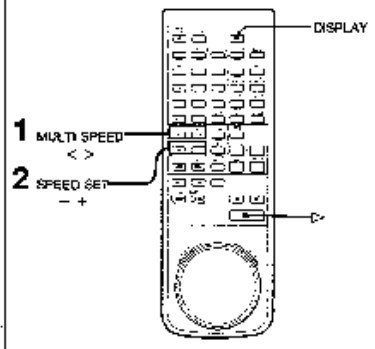
Press Audio MONITOR.

| | | After playback has started | Press AUDIO MONITOR. ● | Press AUDIO MONITOR. |
|---|---|---|---|---|
| Reproduced sound | Stereo disc | Stereo | ● Left channel | ● Right channel |
| | SAP disc | Audio signal (1st mono channel) | ● Audio signal (1) | ● Audio signal (2) |
| | | Audio signal (2) (right channel) | | |
| Indication in | | VOL DIR | ● L/L | ● R/R |

**Discs with CX Label**
Discs bearing the CX label are recorded with the CX noise reduction system, which gives wide dynamic range. The CX indicator should automatically light up. Some CX discs do not indicate the code necessary to automatically activate the player's CX noise reduction system. If the CX indicator does not light, press the CX button on the Remote Commander to manually activate the system.

**To switch between digital and analog sound on an LD (for NTSC discs only)**
If the LD contains a digital stereo sound signal, the player automatically sends that to the output jacks. Pressing the ANALOG button on the Remote Commander switches to the analog audio signal and turns the DIGITAL SOUND indicator off. Press the ANALOG button a second time to return to digital sound output. With certain discs, there may be a difference in volume between the digital and the analog sound.

# To Change Playback Speed and Direction - Speed Play ( CAV Standard-paly)




### To change the speed

**1** Select the playback direction.
Press > for the forward direction.
Press < for the reverse direction.

**2** Select the playback speed.
Press + to increase speed.
Press – to reduce speed.

| | Speed indication | Speed (approx.) |
|---|---|---|
| Fast | ×10 | 10 times normal speed |
| | ×5 | 5 times normal speed |
| | ×3 | 3 times normal speed |
| | ×2 | 2 times normal speed |
| | ×1 | Normal speed |
| | ×1/2 | 1/2 normal speed |
| | ×1/4 | 1/4 normal speed |
| | ×1/8 | 1/8 normal speed |
| | ×1/16 | 1/16 normal speed |
| | ×1/30 | 1/30 normal speed |
| Slow | ×1/90 | 1/90 normal speed |

Press ▷ to resume normal playback.

### To change the direction

Press < to view the picture in reverse direction, or Press > to view in forward direction.
To resume normal playback, press ▷.

### To display the speed and direction

Press DISPLAY.
The selected direction (< or >) and speed are shown.

**Sound during speed play**
The sound can be heard only during × 1 (normal) speed play in the forward direction. In other speed and direction combinations, the sound is muted.

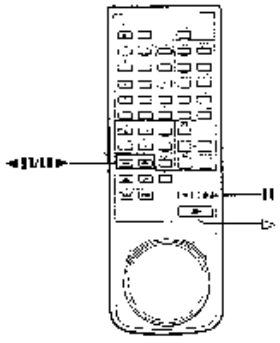
**CLV discs**
The above functions are available only with CAV discs. If they are attempted with CLV discs, a three-second warning message "SIDE A CLV" or "SIDE B CLV" will appear on the screen.

**PAL discs**
The image may be in black and white during × 10 (10 times) speed play in both directions.

**Discs with automatic picture stop function**
When a picture stop code is encountered during playback in the normal speed or slower than the normal speed, playback stops at that frame. Press ▷ to resume playback or a speed play button to continue the speed play.



# To Play Frame by Frame – Step Playback ( CAV standard-paly)




### To view a still picture

Press II (Pause).
The picture stops at the current frame.
To resume normal playback, press ▷.

### To view one frame at a time – step playback

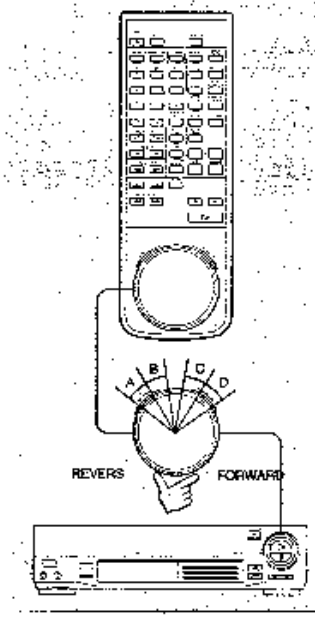
Press II (pause) once for freeze-frame.
To advance the picture by one frame, press II► (STEP in forward).
To go back by one frame, press ◄II (STEP in reverse).
Hold the button down for continuous frame by frame viewing.
To resume normal playback, press ▷.

During step playback operation
The sound is mute during step playback.

# To Search for a Particular Scene

## Dual Speed Scan

The playback speed can be changed depending on the angle of turning the shuttle ring.




**Normal Scan**

Reverse scan: Turn the shuttle ring to the B position.
Forward scan: Turn the shuttle ring to the C position.
Scans in the speed of approximately 10 times normal speed.

**High-speed scan**

Reverse scan: Turn the shuttle ring to the A position.
Forward scan: Turn the shuttle ring to the D position.
Scans in the speed of approximately 30 times normal speed.

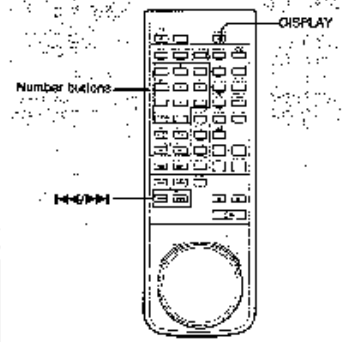
* To resume the normal play, release your finger from the shuttle ring.

**While scanning in either direction**

* The sound is muted.
* The image with a CLV disc will be in black and white with some instability.
* Scanning speed varies according to the position on the CLV disc.
* The image with a CAV discs will be in black and white on some TV.
* A certain amount of noise is inevitable with all scanning operations. Especially, the image of CAV discs may be a little noisy.

## Chapter/Track Search

Some LDs are divided into sections called chapters. The selections on CDs and CDVs are called tracks. Chapters and tracks are assigned numbers and this information is usually indicated on the disc jacket or label.




**Direct chapter or track search**

Enter the desired chapter or track number by pressing the number buttons.
If you have pressed a wrong number, simply press the correct one.
Playback automatically starts from the designated chapter or track.

**Chapter or track skip search**

To advance to the beginning of successive chapters/tracks, press I▶▶I repeatedly as needed.
To return to the beginning of the current chapter/track, press I◀◀ once. Press it repeatedly – before the picture reappears – to go to the beginning of previous chapters/tracks.

To check the current chapter/track and frame/time numbers
The numbers are shown in the display window of the player.
Press DISPLAY to display them on the screen.

To enter a number greater than 10
Use the +10 and "0" buttons.
Example: To enter 14 [+10] → [4]
To enter 20 [+10] → [+10] → [0]

If the +10 button is pressed by mistake
Press the CLEAR button, then press the other buttons for the correct number.

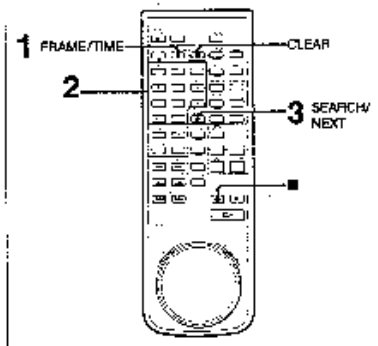
**Notes**

* The chapter search feature will not function if the disc does not include chapter numbers. In this case, the screen message will give only time or disc numbers.
* If a chapter number not contained on an LD is entered, playback stops. If the ALL repeat function is on (see page 22), playback will resume from the beginning of the disc.
* During CDV playback, the unit will not accept entry of track numbers not contained on the disc.

# To Search for a Particular Scene

## Frame Search (CAV Discs)

Each picture on a CAV (standard-play) disc is called a frame.




Example: Locate frame number 12340.

**1 Press FRAME/TIME.**

**2 Press "1", "2", "3", "4", and "0" in sequence to enter the frame number.**
If you enter a wrong frame number, press FRAME/TIME once more to return the display indication to zero, and then enter the correct number.

**3 Press SEARCH/NEXT.**
The desired frame is located, and playback automatically starts.

Search can be made in the freeze-frame, pause, and speed play modes as well as the normal playback mode. When the desired frame appears after the search, playback continues in the same mode.

To cancel frame search
Before the SEARCH/NEXT button is pressed: Press CLEAR.
After the SEARCH/NEXT button was pressed: Press ■.

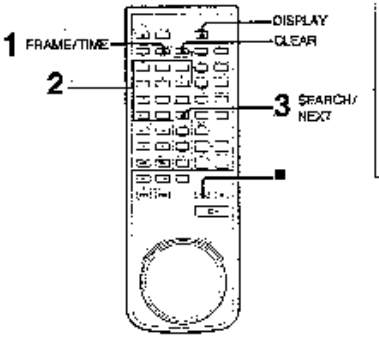
**To check the current chapter and frame numbers**
These numbers appear in the display window on the player. Press DISPLAY on the Remote Commander to display them on the screen.

**Note**

If a frame number not contained on a disc is entered, playback stops. If the ALL repeat function is on (see page 22), playback will resume from the beginning of the disc.

## Time Search (CLV Discs)

CLV (extended-play) discs keep track of the position as elapsed time from the beginning of the disc.




Example: Locate the 12 min 05 sec point.

**1 Press FRAME/TIME.**

**2 Press "1", "2", "0", "5" in sequence.**
If you enter a wrong time number, press FRAME/TIME once more to return the display indication to zero, and then enter the correct number.

**3 Press SEARCH/NEXT.**
The picture of the desired time number is located, and playback automatically starts.

To cancel time search
Before the SEARCH/NEXT button is pressed: Press CLEAR.
After the SEARCH/NEXT button was pressed: Press ■.

**To check the current chapter and time numbers**
These numbers appear in the display window on the player. Press DISPLAY on the Remote Commander to display them on the screen.

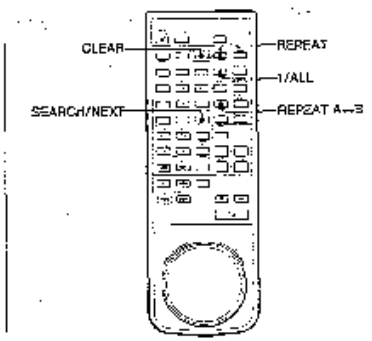
**Notes**

- If the disc does not include time data to the second, enter the time in minutes only.
- If the selected number is greater than the total time of the disc, playback stops. If the ALL repeat function is on (see page 22), playback will resume from the beginning of the disc.

# To Play Particular Portion of a Disc

## Repeat Playback

A single chapter or track, a designated portion of a disc, or the entire disc can repeatedly be played back.




### To repeat the current chapter or track – SINGLE repeat

1 Press REPEAT.

2 Press 1/ALL.
REPEAT and SINGLE indications light up in the display window.
When the end of the current chapter or track is reached, playback of the chapter or track is automatically repeated.

### To repeat the entire side of the disc – ALL repeat

Press REPEAT.
The REPEAT indication lights up in the display window, and the entire side of the disc is repeatedly played back.

### To repeat a designated portion of a disc – A↔B repeat

1 During playback, press REPEAT A↔B at the start point (point A) of the desired portion.
The REPEAT A↔B indication flashes in the display window.

2 At the end point (point B) of the desired portion, press REPEAT A↔B.
The REPEAT A↔B indication lights up in the display window.
The player returns to the point where REPEAT A↔B was first pressed and repeat playback automatically starts.

**To use custom repeat**
To carry out repeat playback between two predefined points on the disc, see page 33.

**To check the current status**
Check the indications in the display window or use the DISPLAY button to verify the current setting on the screen.

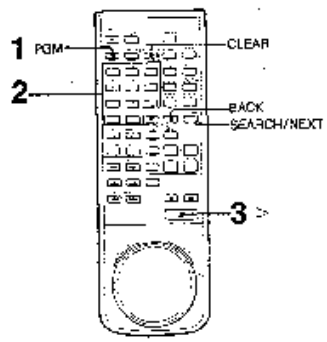
**To cancel SINGLE or ALL repeat**
Press REPEAT so that the REPEAT indication goes out.
If you have used the AUTO REPEAT switch on the main unit to activate the ALL repeat function, select OFF on the switch to cancel the function.

**To cancel A↔B repeat**
Press CLEAR.

**AUTO REPEAT switch on the unit**
Select ON to repeat the entire disc side.

## Program Playback

Up to 20 chapters or tracks can be played back in a specified order.




Example: To play LD chapter 5, 4, 2, and 8 in that order.

1 Press PGM.
The PROGRAM indication in the display window lights up.

2 Enter the chapter numbers by pressing "5", "4", "2", and "8" in sequence.

3 Press ▷ (play).
The first chapter is searched for, and playback starts from the beginning of chapter 5 and continues through chapter 4, 2, 8, and stops.

**If you make a mistake in chapter number entry**
To start over, press CLEAR and PGM again, and enter the correct numbers.
To change a number, press SEARCH/NEXT for the next number or BACK for the previous number until the incorrect number flashes on the screen, and then enter a new number.

**To release or cancel program playback**
Press CLEAR or 1/ALL. The player reverts to normal playback.

**To repeat program playback**
Use REPEAT to call up the REPEAT indication.

**To enter chapter numbers over 10**
Use the "+10" and "0" buttons.

**If the +10 button is pressed by mistake**
Press the CLEAR button, then press the other buttons for desired number.

**To move to a preceding or following programmed track**
Press the ⏮ or ⏭ button.

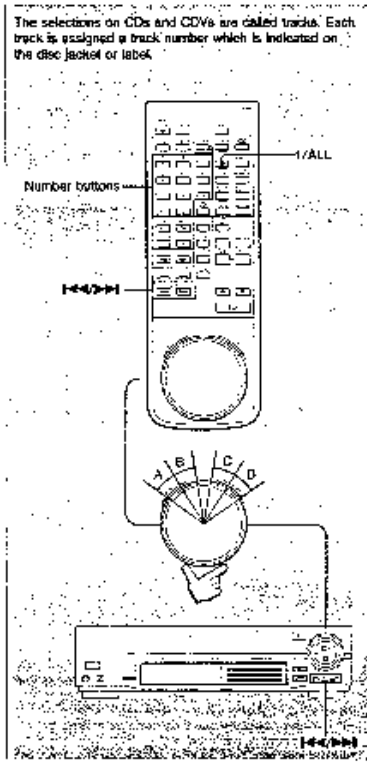
**To check the program contents**
Press PGM.
The program is displayed for about 5 seconds on a TV screen. The currently playing program number blinks.

**Notes**

- When the shuttle ring is kept turned to the forward direction during program playback and the playback comes to the end of the current selection, the next programmed chapter will be played back. When the shuttle ring is kept turned to the reverse direction, the unit will not go back to previous playbacks. If you want to move a preceding programmed chapter, press ⏮ button and the desired programmed number comes up.
- If non-existing chapter numbers or a disc are entered, the program cannot be conducted.
- Programmed contents are stored until the disc is removed or the power is switched off.

# To Search for a Particular Track

The selections on CDs and CDVs are called tracks. Each track is assigned a track number which is indicated on the disc jacket or label.




**To search by a track number**

Enter the desired track number by pressing the number buttons.

**To play a single track once**
Use the 1/ALL button on the Remote Commander to call up the SINGLE indication. Then select the track with the numerical buttons.
When the track has been played, the unit enters the stop mode. To release the setting, press 1/ALL again.

**When a wrong number was entered**
Press the button for the correct number.

**To skip tracks**

To advance to the beginning of successive tracks, press I►►I repeatedly as needed.
To return to the beginning of the current track, press I◄◄ once. Press repeatedly to go back to the beginning of previous tracks.

**To search for a particular point**

**To scan at the fast speed**
Turn the shuttle ring to B position for scanning in reverse at the fast speed and C for scanning forward.

**To scan at the higher speed**
Turn the shuttle ring to A position for scanning in reverse at the higher speed and D for scanning forward.

**To resume the normal speed,** release your finger from the shuttle ring.

**To enter track numbers over 10**
Use the +10 and "0" buttons.

**If the +10 button is pressed by mistake**
Press the CLEAR button, then press the other buttons for desired number.

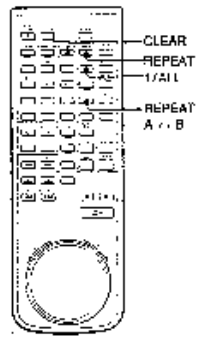
**Sound during search**
When scan is started from the playback mode, the sound can be heard at a low level. When scan was started from the pause mode, the sound is muted.



# To Listen Only to Particular Track(s)

## Repeat Playback

A single track, a specified portion of a disc, or all the tracks on a disc can repeatedly be played back.




**To repeat the current track – SINGLE repeat**

1 Press 1/ALL.

2 Press REPEAT.
The REPEAT and SINGLE indications light up in the display window. When the end of the current track is reached, playback of the track is automatically repeated.

Press REPEAT to turn off the REPEAT indication to repeat the track only once.

**To repeat all tracks – ALL repeat**

Press REPEAT.
The REPEAT indication lights up and the entire disc is repeatedly played back.

**To repeat a designated portion of a disc – A↔B repeat**

1 During playback, press REPEAT A↔B once at the start point (point A) of the desired portion.
The REPEAT A↔B indication flashes in the display window.

2 At the end point (point B) of the desired portion, press REPEAT A↔B.
The REPEAT A↔B indication lights up. The player returns to the point where REPEAT A↔B was first pressed, and repeat playback automatically starts.

**To cancel SINGLE or ALL repeat**
Press REPEAT so that the REPEAT indication goes out.
If you have used the AUTO REPEAT switch on the remote unit to activate the ALL repeat function, select OFF on the switch to cancel the function.

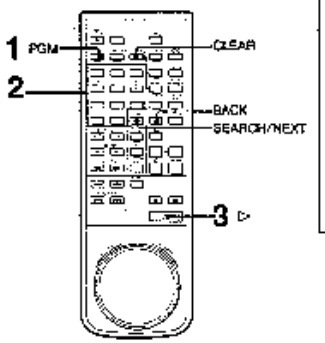
**To cancel A↔B repeat**
Press CLEAR.

**AUTO REPEAT switch on the unit**
Select ON to repeat the entire disc side.

# To Listen Only to Particular Track(s)

## Program Playback

Up to 20 tracks can be played back in a specified order.




Example: To play tracks numbered 5, 4, 2, and 8 in that order.

**1** Press PGM.
The PROGRAM indication in the display window lights up.

**2** Enter the track numbers by pressing "5", "4", "2", and "8" in sequence.

**3** Press ▷ (play).
The first track is searched for, and playback starts from the beginning of the track 5 and continues through track 4, 2, 8, and stops.

**If you make a mistake in track number entry**
To start over, press CLEAR, and PGM again, and enter the correct numbers.
To change a number, press SEARCH/NEXT (for the next number) or BACK (for the previous number) until the incorrect number flashes in the display window, and then enter a new number.

**To enter track numbers over 10**
Use the +10 and "0" buttons.
Example: To enter 14 [+10] → [4]
To enter 20 [+10] → [+10] → [0]

**If the +10 button is pressed by mistake**
Press CLEAR button, then press the other buttons for desired number.

**To release or cancel program playback**
Press CLEAR or TA/ALL. The unit reverts to normal playback.

**To repeat a program**
Press REPEAT to turn on the REPEAT indication in the display window.

**AUTO REPEAT switch on the unit**
Select ON to repeat the entire disc side.

**To move to a preceding programmed track**
Press the ⏮ button.

**To move to a following programmed track**
Press ⏭ button.

**Notes**

- When the shuttle ring is kept turned to the forward direction during program playback and the playback comes to the end of the current selection, the next programmed track will be played back. When the shuttle ring is kept turned to the reverse direction, the unit will not go back to previous tracks.
- If not existing track numbers on a disc are entered, the program may not be completed.

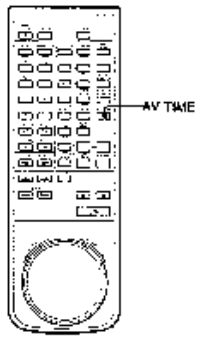
**To check time and track information on a TV or monitor screen**
Turn on the power of the TV or monitor connected to the player and press DISPLAY. Time and track information for the CD/CDV is shown on the screen.

**During program play**
The numbers on the AV calendar display go out as tracks are played. The contents of a program are stored until the disc is removed or the player is turned off.

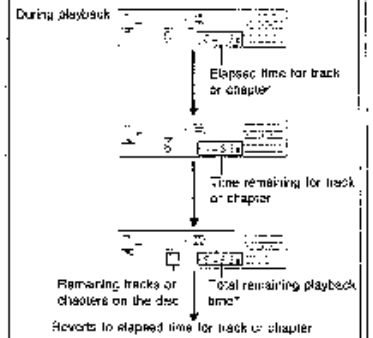
**Program playing time**
The total playing time of the program is displayed, only when tracks with numbers under 20 are programmed and the total playing time is less than 100 minutes.



# To Change Time Display (AV TIME)




**To change the time display in the display window, press AV TIME.**
The display changes in the following sequence each time the button is pressed.


During playback
Elapsed time for track or chapter
Time remaining for track or chapter
Remaining tracks or chapters on the disc
Total remaining playback time*
Reverts to elapsed time for track or chapter

* With a CDV disc, these figures refer only to the portion (audio/video) currently in use.

**Display on the screen**
If the TV set or monitor connected to the player is on and the DISPLAY button is pressed, the track number, time, and other information recorded on the CD/CDV appears on the screen.

**Note**

The remaining time will not be displayed for a track number higher than 20 and playing time more than 100 minutes.

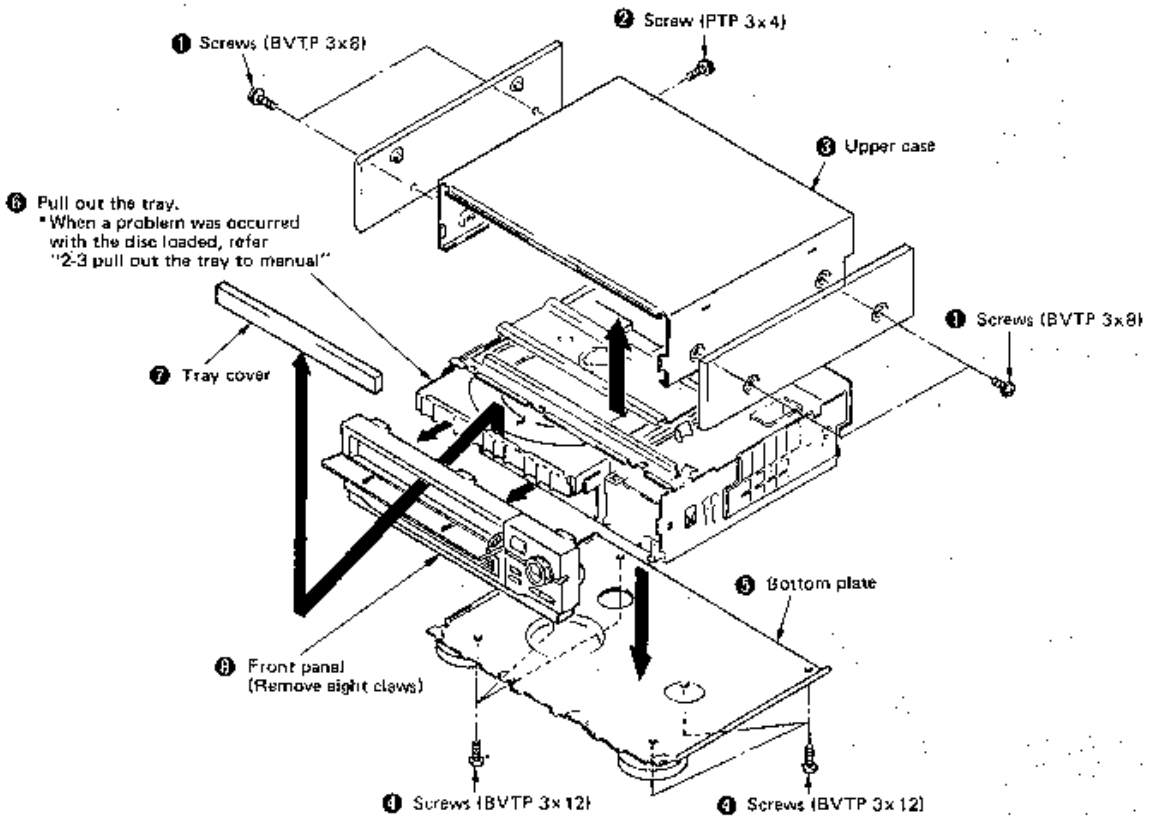
**Note on LD discs**

The time display function is available only with an LD containing TOC data.
First, the elapsed time or the number of frames is displayed. Pressing the AV TIME button then changes the time display as shown above.

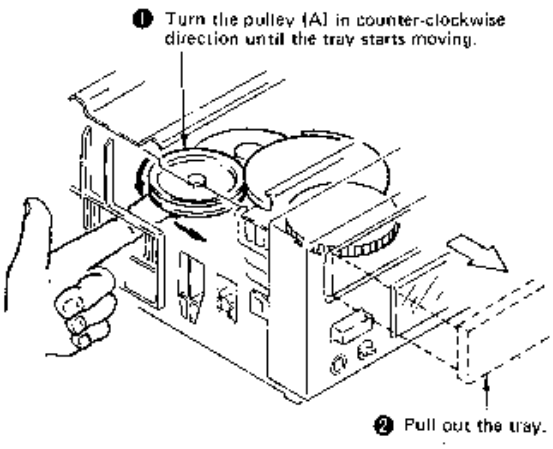
# SECTION 2
# DISASSEMBLY

**Note:** The number within "❶" means the sequential number for dismounting.

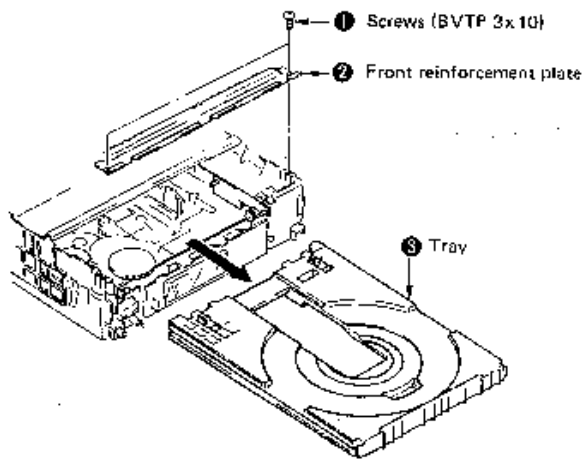
## 2-1. REMOVAL OF THE CABINET


❶ Screws (BVTP 3x8)
❷ Screw (PTP 3x4)
❸ Upper case
❻ Pull out the tray.
* When a problem was occurred with the disc loaded, refer "2-3 pull out the tray to manual"
❶ Screws (BVTP 3x8)
❼ Tray cover
❺ Bottom plate
❽ Front panel (Remove eight claws)
❾ Screws (BVTP 3x12)
❹ Screws (BVTP 3x12)

## 2-2. PULL OUT THE TRAY TO MANUAL

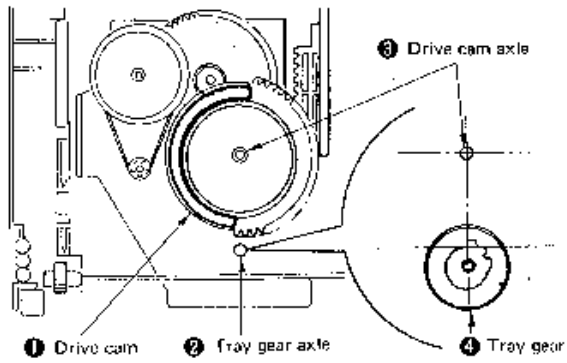



## 2-3. REMOVAL OF TRAY

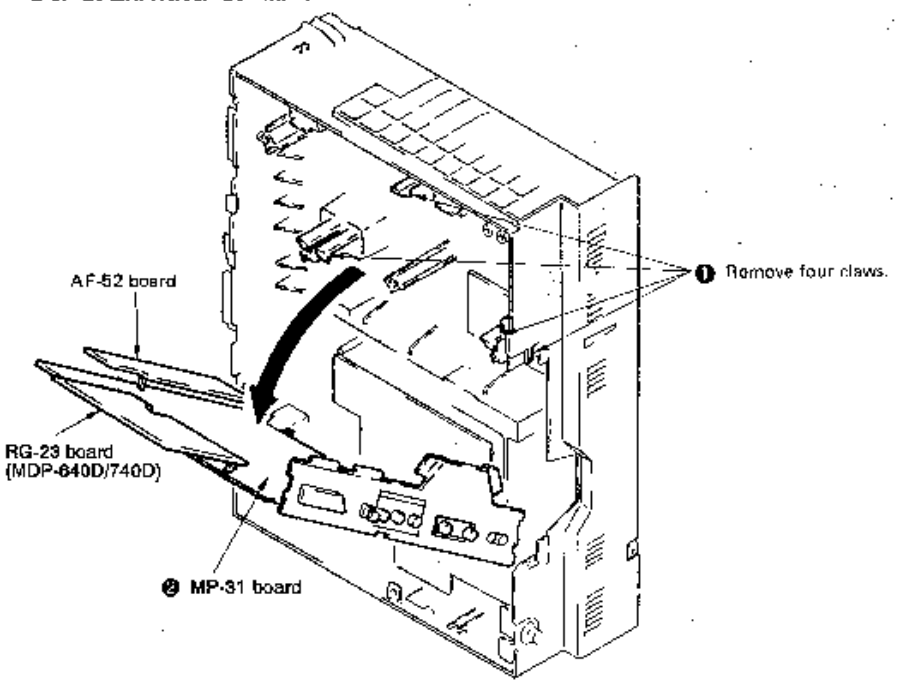


## 2-4. ALIGNMENT OF LOADING GEAR PHASE

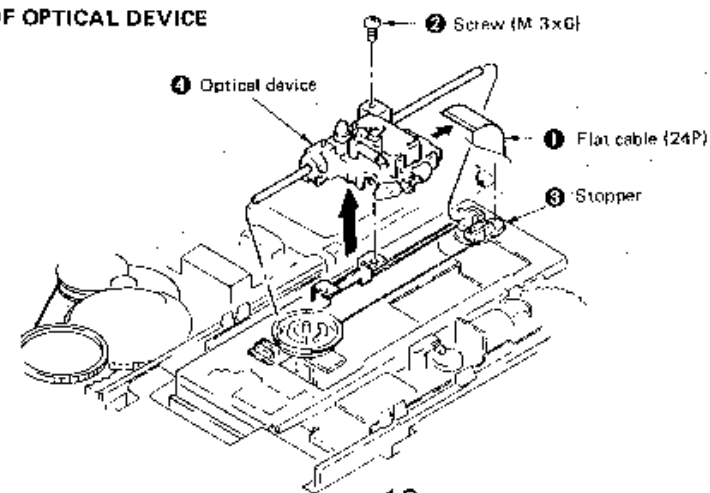
1. Install the drive cam as shown in the illustration. At this time, make sure that the last tooth of gear is aligned with the line from the center of the tray gear axle and the drive gear axle.
2. Install the tray gear as shown in the illustration. At this time, make sure the flat surface of the cam is at a right angle with the drive cam.



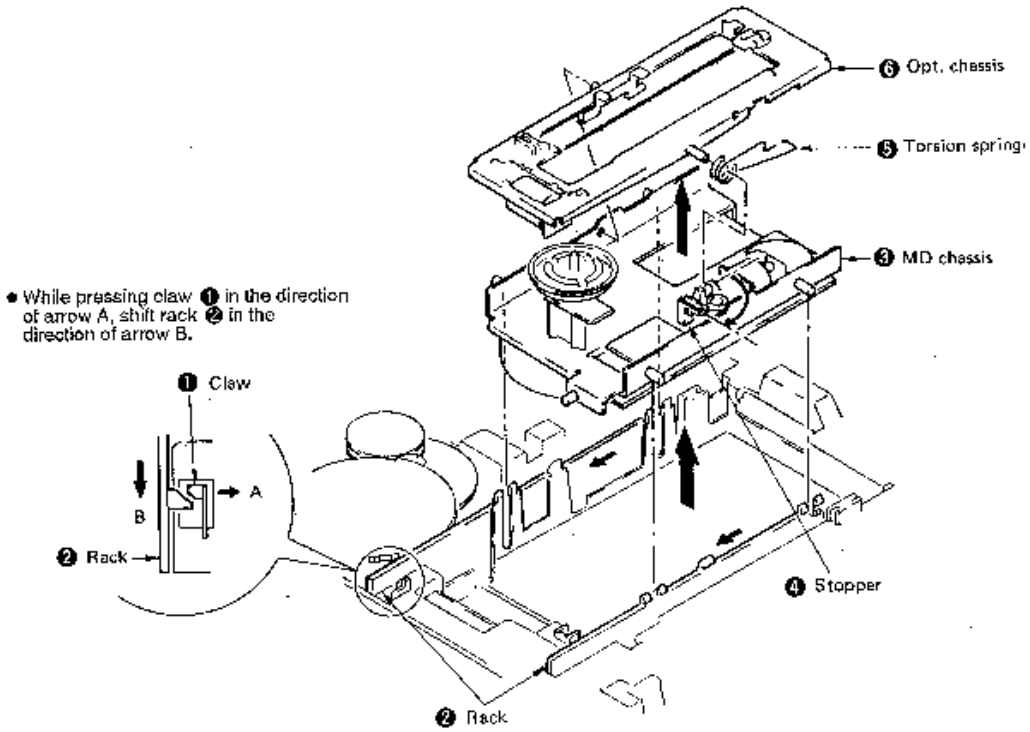

## 2-5. OPERATING OF MP-31 BOARD



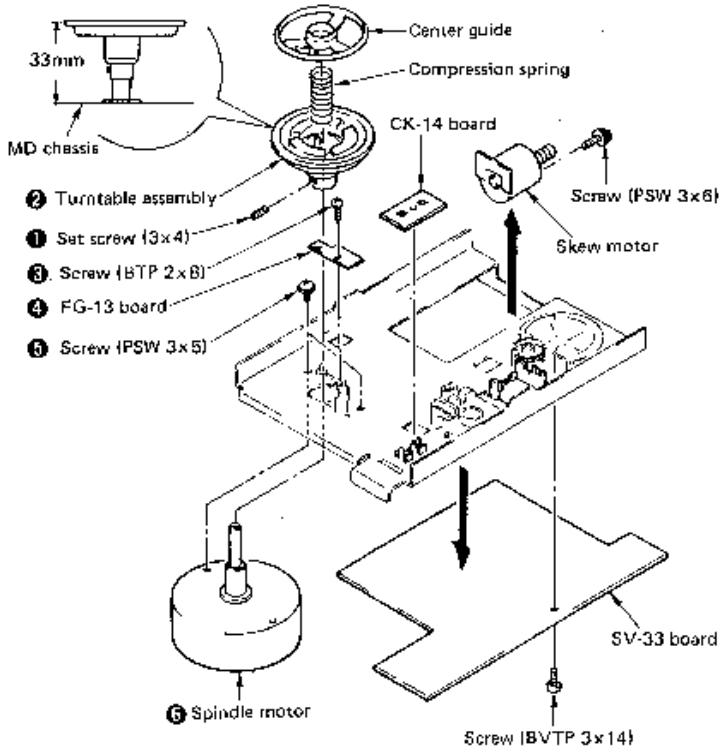

## 2-6. REMOVAL OF OPTICAL DEVICE



## 2-7. REMOVAL OF MD CHASSIS AND OPT. CHASSIS

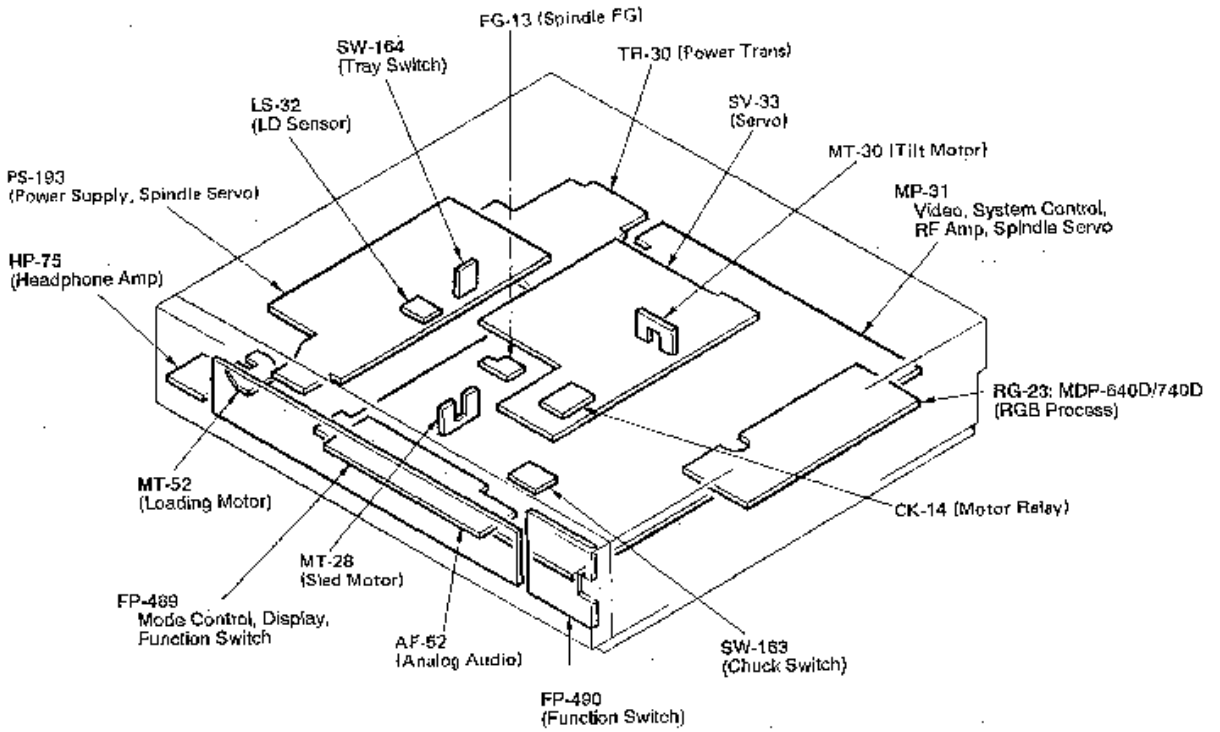



## 2-8. REMOVAL OF TURNTABLE, SPINDLE MOTOR, SV-33 BOARD AND FG-13 BOARD

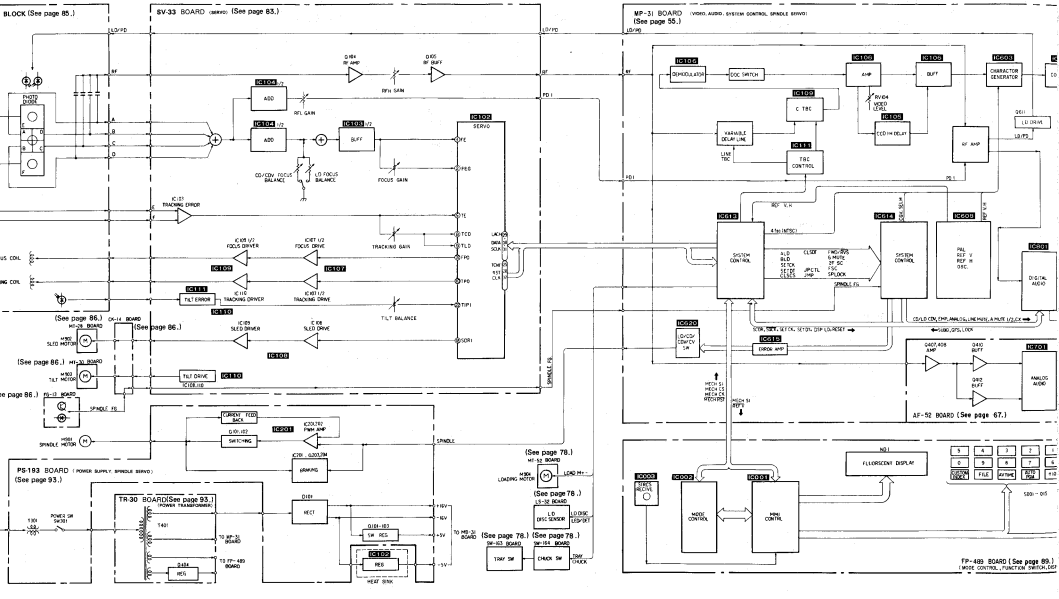


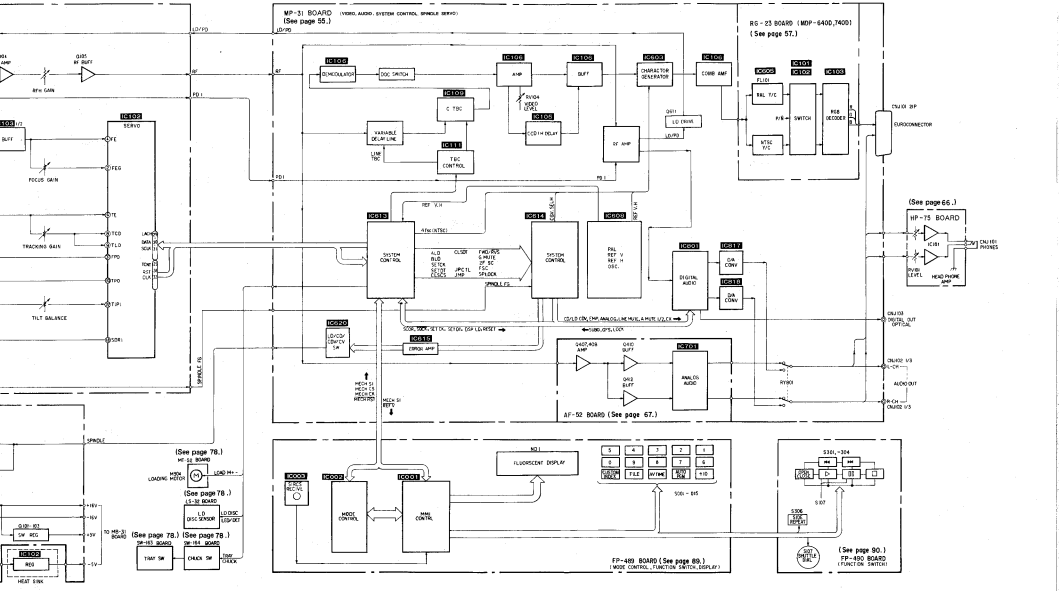
# SECTION 3
# DIAGRAMS

## 3-1. CIRCUIT BOARDS LOCATION

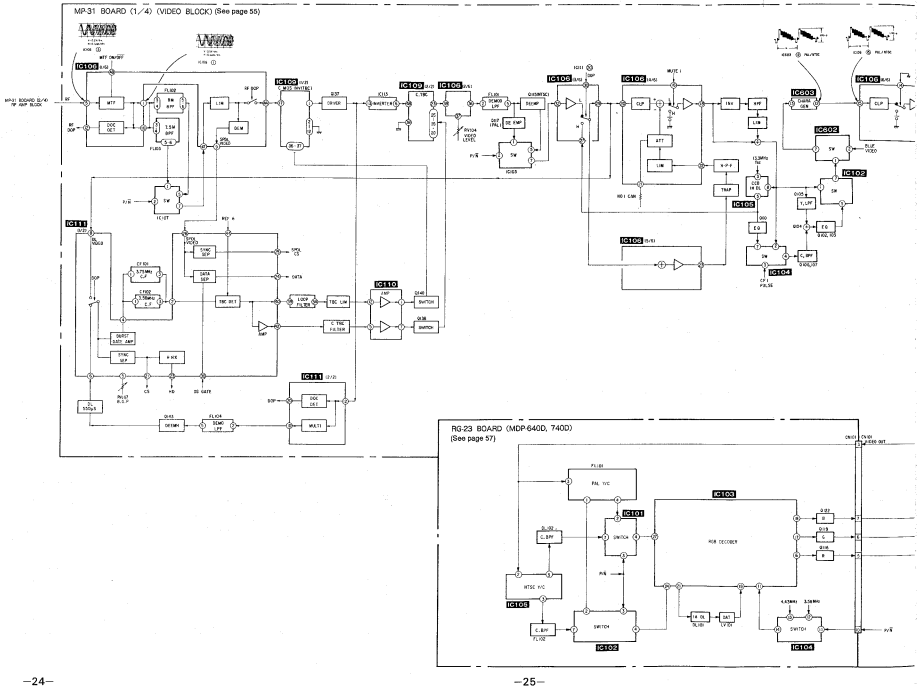


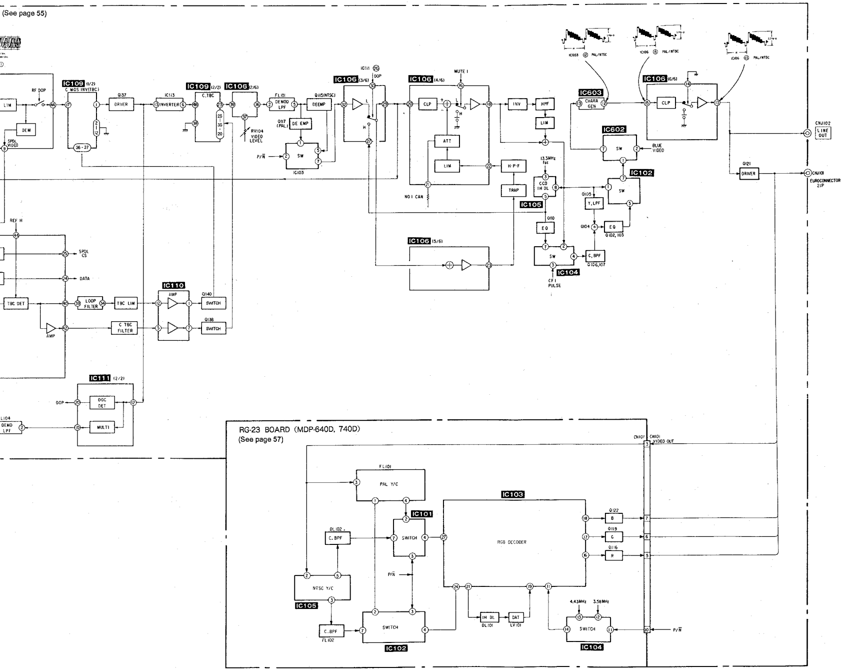
## RALL BLOCK DIAGRAM

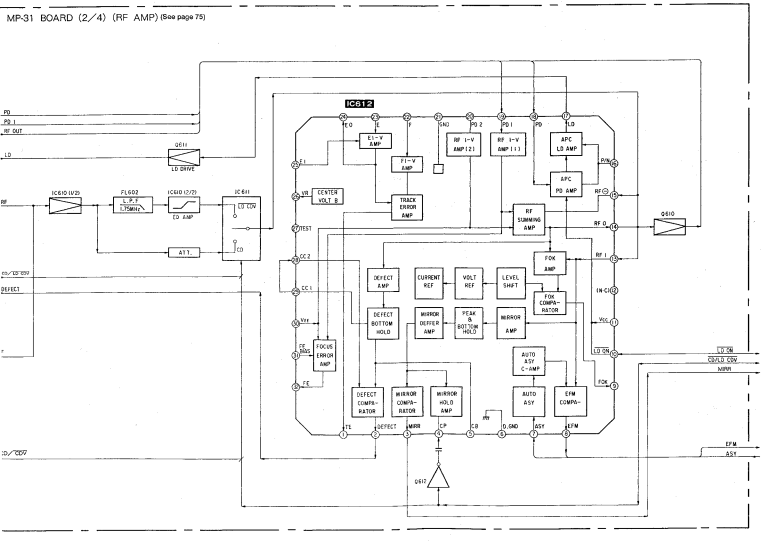


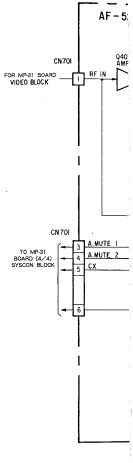

MP-31 BOARD (VIDEO, AUDIO, SYSTEM CONTROL, SPINDLE SERVO)
(See page 55.)
RG-23 BOARD (MDP-6400,7400)
(See page 57.)
IC1010 DEMODULATOR
IC1006 DOC SWITCH
IC1016 AMP
IC1005 BUFF
IC1004 CHARACTER GENERATOR
IC1002 COMB AMP
IC1009 RAM, Y/C
IC1011 IC1012 SWITCH
IC1013 RGB DECODER
CN1009 21P EUROCONNECTOR
IC1008 C TBC
IC1014 VIDEO LEVEL
IC1015 CCD 1H DELAY
VARIABLE DC AFC LINE
IC1011 TBC CONTROL
Q811 LD DRIVE
RF AMP
LD/PD
PD I
RF
IC103 1/2 BUFF
IC1013 SERVO
TE
FEG
FOCUS GAIN
TE
TRACKING GAIN
TCD
TLO
TPD
TFO
TEMP SCLT CLK
TLIM
TILT BALANCE
SDRI
LAT
DATA
SCLK
SPINDLE FG
REF V.H
REF H.H
IC814 SYSTEM CONTROL
ATN (NTSC)
ALD CLOSE FWD/REV & MUTE SET/CH SP/SP JPRCTL SP DC SCLOCK JUMP FSC SPINDLE
IC814 SYSTEM CONTROL
IC1000 PAL REF V REF H OSC.
IC1017 D/A CONV
IC1018 D/A CONV
IC1020 DIGITAL AUDIO
CS/LD/DIN, CMP, ANALOG, LINE MUSE, & MUTE, I/O, CK
SDSK, SDSR, SETCK, SETDO, DSP LD, RESET
SDBO, DPS, LOCK
IC1019 EEPROM
IC1021 LOW DV 1/4
MECH SI MECH CS MECH CK MECH DO
IC1007 ANALOG AUDIO
Q407, 409 AMP
Q410 BUFF
Q412 BUFF
RY1001
AF-52 BOARD (See page 67.)
(See page66.)
HP-75 BOARD
IC1081
RY/BY LEVEL
HEAD PHONE AMP
CN1101 HEAD PHONES
CN1103 DIGITAL OUT OPTICAL
CN1102 V3 CS-CH
AUDIO OUT
R-CH CN1102 V3
SPINDLE
(See page 78.)
MF-51 BOARD
MDM LOADING MOTOR
LOAD IN+
(See page 78.)
LS-52 BOARD
LD DISC SENSOR
LD DISC CSS OUT
+16V
+9V
+5V
-5V
Q1201 REG
SW REG
IC1202 REG
HEAT SINK
TO MB-31 BOARD (See page 78.)
SW-151 BOARD
TRAY SW
(See page 78.)
SW-151 BOARD
CHUCK SW
TRAY CHUCK
IC1003 MODE RECEIVE
IC1002 MODE CONTROL
IC1013 MAIN CONTROL
IC1011 FLUORESCENT DISPLAY
5 4 3 2 1
6 7 8
CUE/REV FF/LE MY/ME REW/TIME VOL
SD01 ~ SD5
S101~S104
S105 REPEAT
S107
S106 SHUTTLE DIAL
(See page 80.)
FP-400 BOARD (FUNCTION SWITCH)
FP-400 BOARD (MODE CONTROL, FUNCTION SWITCH, DISPLAY)

## VIDEO BLOCK DIAGRAM

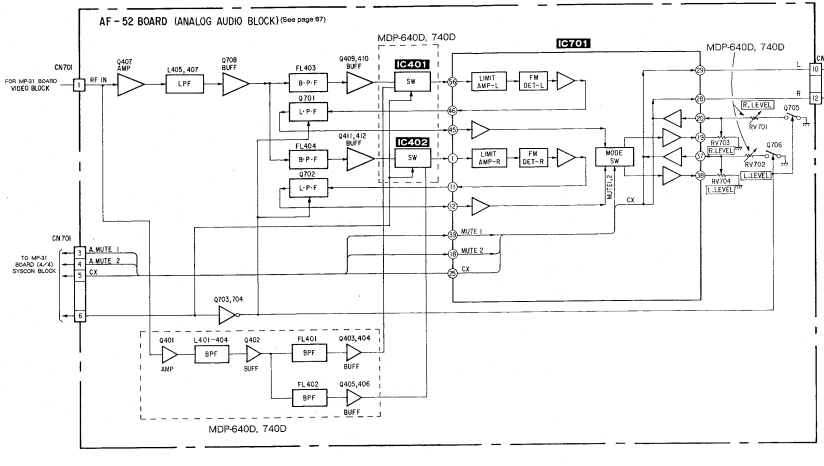


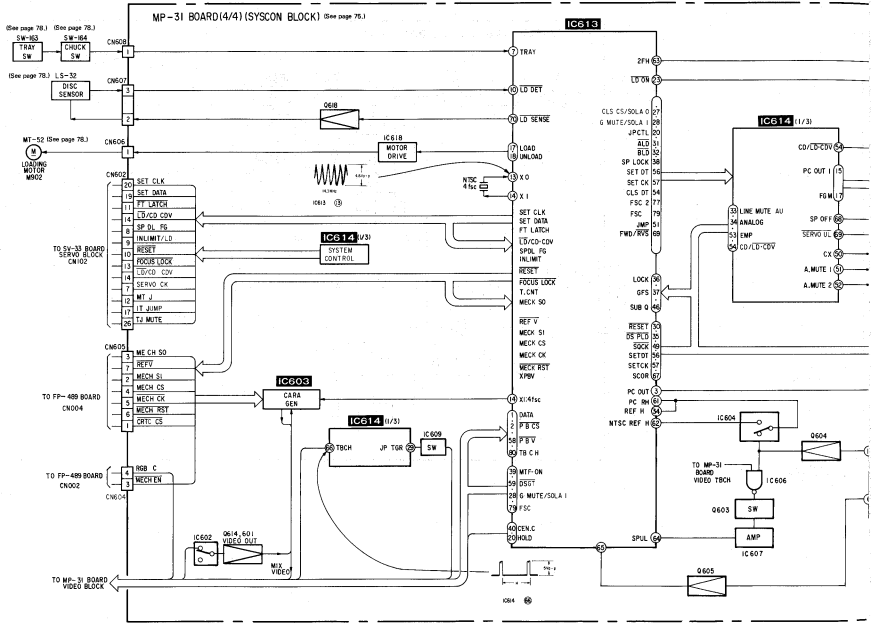

(See page 55)
RF DOP
LIM
DEM
SPDL VIDEO
IC109 (1/2)
C MOS INV(TBC)
36 - 37
Q137
DRIVER
IC113
INVERTER
IC109 (2/2)
C.TBC
IC106 (2/6)
RV104 VIDEO LEVEL
FL101
DEMOD LPF
Q115(NTSC)
DEEMP
Q117 (PAL)
DE EMP
P/N
SW
IC103
IC111 20
DOP
IC106 (3/6)
L
H
IC106 (4/6)
MUTE I
CLP
ATT
LIM
NOI CAN
INV
HPF
LIM
H·P·F
TRAP
13.3MHz fsc
CCD 1H DL
IC105
Q110
EQ
IC106 (5/6)
SW
IC104
CFI PULSE
C, BPF
Q106,107
Q105
Y, LPF
Q104
EQ
Q102, 103
IC603 12 PAL/NTSC
IC603
CHARA GEN
IC602
SW
BLUE VIDEO
IC102
SW
IC106 15 PAL/NTSC
IC106 (6/6)
CLP
IC106 13 PAL/NTSC
CNJ102
LINE OUT
Q121
DRIVER
CNJ101
EUROCONNECTOR 21P
REF H
SPDL CS
DATA
TBC DET
LOOP FILTER
TBC LIM
AMP
C TBC FILTER
IC110
AMP
Q140
SWITCH
Q138
SWITCH
IC111 (2/2)
DOP
DOC DET
MULTI
FL104
DEMO LPF
RG-23 BOARD (MDP-640D, 740D)
(See page 57)
CN101
CN101
VIDEO OUT
FL101
PAL Y/C
IC101
DL102
C. BPF
SWITCH
P/N
NTSC Y/C
IC105
C.BPF
FL102
SWITCH
IC102
IC103
RGB DECODER
Q122
B
Q119
G
Q116
R
1H DL
DL101
DAT
LV101
4.43MHz
3.58MHz
SWITCH
IC104
P/N

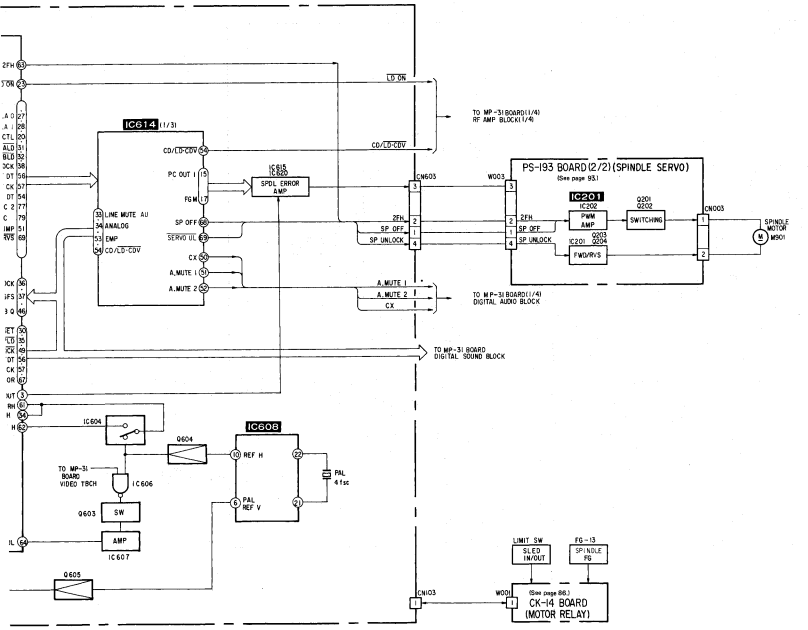

MP-31 BOARD (2/4) (RF AMP) (See page 75)
IC612
TEO
E
F
SAO
PD 2
PD 1
PD
TLD
E-V AMP
F-V AMP
RF I-V AMP(2)
RF I-V AMP(1)
APC LD AMP
APC PD AMP
RF SUMMING AMP
TRACK ERROR AMP
CENTER VOLT B
TEST
CC 2
CC 1
VRX
CE
FE
RF I
RF O
IN CIC
VCC
LD ON
CD/LD CSV
MPWR
FOK
EFM
ASY
DEFECT AMP
CURRENT REF
VOLT REF
LEVEL SHIFT
FOK COMPARATOR
DEFECT BOTTOM HOLD
MIRROR DEFECT AMP
PEAK & BOTTOM HOLD
MIRROR AMP
FOCUS ERROR AMP
AUTO ASY C-AMP
DEFECT COMPARATOR
MIRROR COMPARATOR
MIRROR HOLD AMP
AUTO ASY
EFM COMPARATOR
RFI
DEFECT
MIRR
CP
CD
D.GND
ASY
EFM
DET
Q611
LD DRIVE
LD
PD
PD 1
RF OUT
IC610 (1/2)
FL602
X'TAL 4.7584MHz
IC610 (2/2)
CD AMP
IC611
LD CSV
ATT
RF
CD
CD/LD CSV
DEFECT
Q610
TO MP-31 BOARD (2/4) SYSCOM BLOCK
TO MP-31 BOARD (2/4) DIGITAL AUDIO BLOCK


AF-5
CN701
RF IN
FOR MP-31 BOARD VIDEO BLOCK
Q40 AMP
CN701
A.MUTE 1
A.MUTE 2
CX
TO MP-31 BOARD (2/4) SYSCOM BLOCK

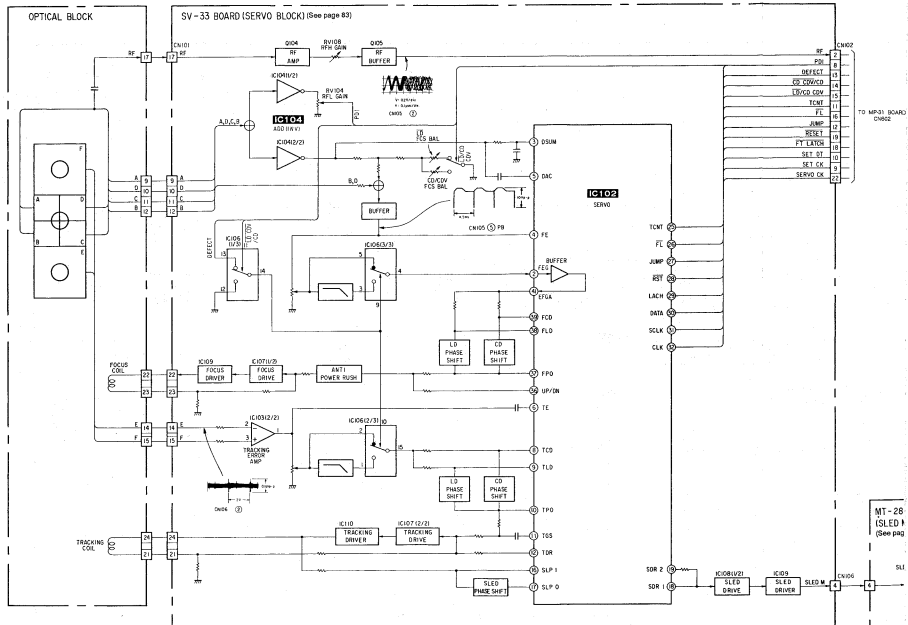
### 3-5. ANALOG AUDIO BLOCK DIAGRAM

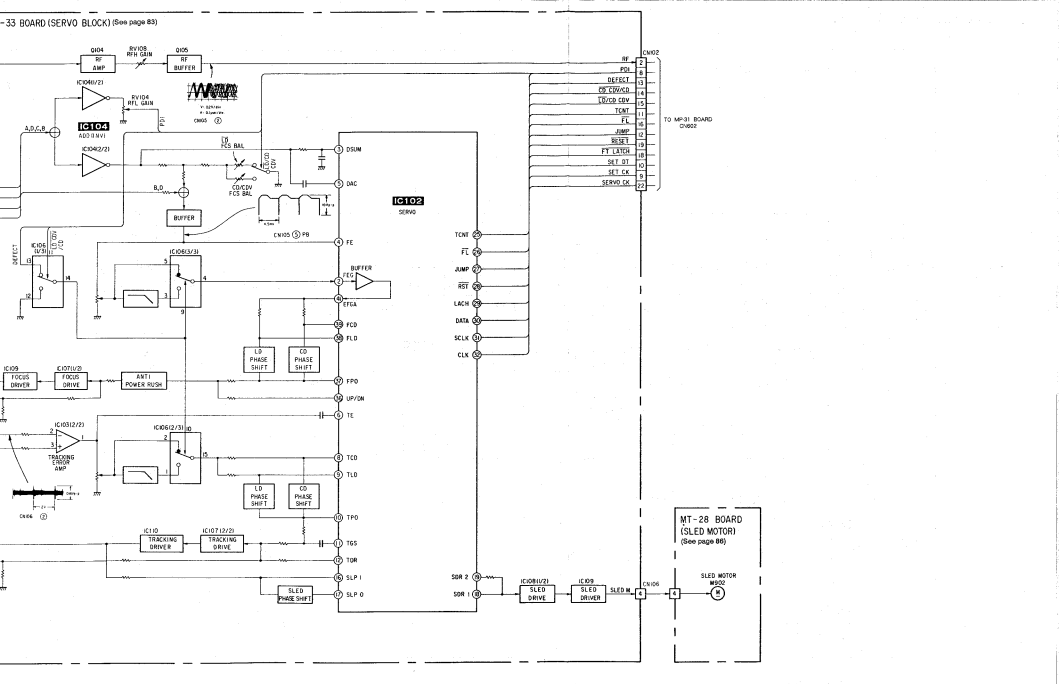



MP-31 BOARD(4/4)(SYSCON BLOCK) (See page 75.)
IC613
IC614 (1/3)
IC614 (2/3)
IC614 (3/3)
IC603
IC604
IC606
IC607
IC609
IC610
IC611
IC612
IC602
Q601
Q602
Q603
Q604
Q605
Q606
CN601
CN602
CN603
CN604
CN605
CN606
CN607
CN608
SW-163 TRAY SW
SW-164 CHUCK SW
DISC SENSOR
LOADING MOTOR M902
TRAY
LD DET
LD SENSE
LOAD
UNLOAD
MOTOR DRIVE
SET CLK
SET DATA
FT LATCH
LD/CD CDV
SP DL FG
INLIMIT/LD
RESET
FOCUS LOCK
SERVO CK
MT J
IT JUMP
TJ MUTE
TO SV-33 BOARD SERVO BLOCK CN102
WE CH SO
REFV
MECH SI
MECH CS
MECH CK
MECH RST
CRTC CS
TO FP-489 BOARD CN004
RGB C
MECH EN
TO FP-489 BOARD CN002
SYSTEM CONTROL
CARA GEN
TBCH
JP TGR
SW
WTF-ON
SSCT
G MUTE/SOLA I
FSC
CEN.C
HOLD
SPUL
AMP
MIX VIDEO
TO MP-31 BOARD VIDEO BLOCK
TO MP-31 BOARD VIDEO TBCH
2FH
LD ON
CLS CS/SOLA O
G MUTE/SOLA I
JP CTL
ALD
BLD
SP LOCK
SET DT
SET CK
CLS DT
FSC 2
FSC
JMP
FWD/RVS
LOCK
GFS
SUB Q
RESET
DS PCD
SSCK
SETDT
SETCK
SCOR
PC OUT
PC RH
REF H
NTSC REF H
LINE MUTE AU
ANALOG
EMP
CD/LD-CDV
PC OUT 1
FG
SP OFF
SERVO UL
CX
A.MUTE 1
A.MUTE 2
NTSC 4fsc
X'tal
X O
X I
REF V
MECK SI
MECK CS
MECK CK
MECK RST
XPMV
X'tal 4fsc
DATA
P'B CS
P'B V
TB C H
MIX-V

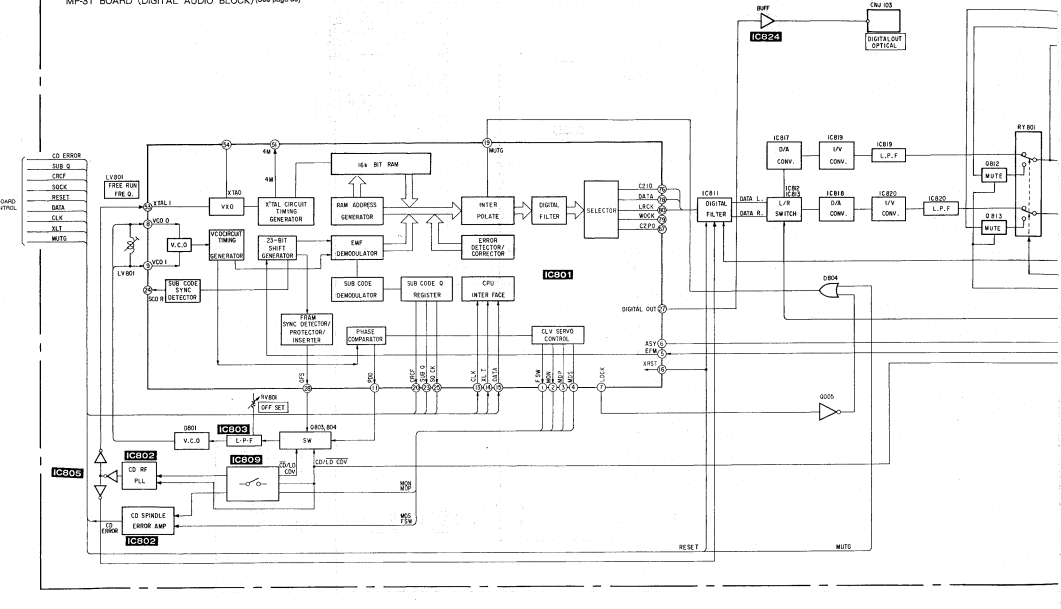

IC614 (1/3)
CD/LD-CDV
PC OUT
FGM
SP OFF
SERVO UL
CX
A.MUTE 1
A.MUTE 2
LINE MUTE AU
ANALOG
EMP
CD/LD-CDV
IC615
IC620
SPDL ERROR AMP
LD ON
TO MP-31 BOARD(1/4)
RF AMP BLOCK(1/4)
CD/LD-CDV
CN605
W003
PS-193 BOARD (2/2) (SPINDLE SERVO)
(See page 93)
IC201
IC202
PWM AMP
SWITCHING
Q201
Q202
Q203
Q204
IC201
FWD/RVS
CN003
SPINDLE MOTOR
M
M901
2FH
SP OFF
SP UNLOCK
A.MUTE 1
A.MUTE 2
CX
TO MP-31 BOARD(1/4)
DIGITAL AUDIO BLOCK
TO MP-31 BOARD
DIGITAL SOUND BLOCK
IC604
Q604
IC608
REF H
PAL REF V
PAL 4.1sc
TO MP-31 BOARD VIDEO 19CH
IC606
Q603
SW
AMP
IC607
Q605
LIMIT SW
SLED IN/OUT
FG-13
SPINDLE FG
CN103
W001
(See page 88)
CK-14 BOARD
(MOTOR RELAY)

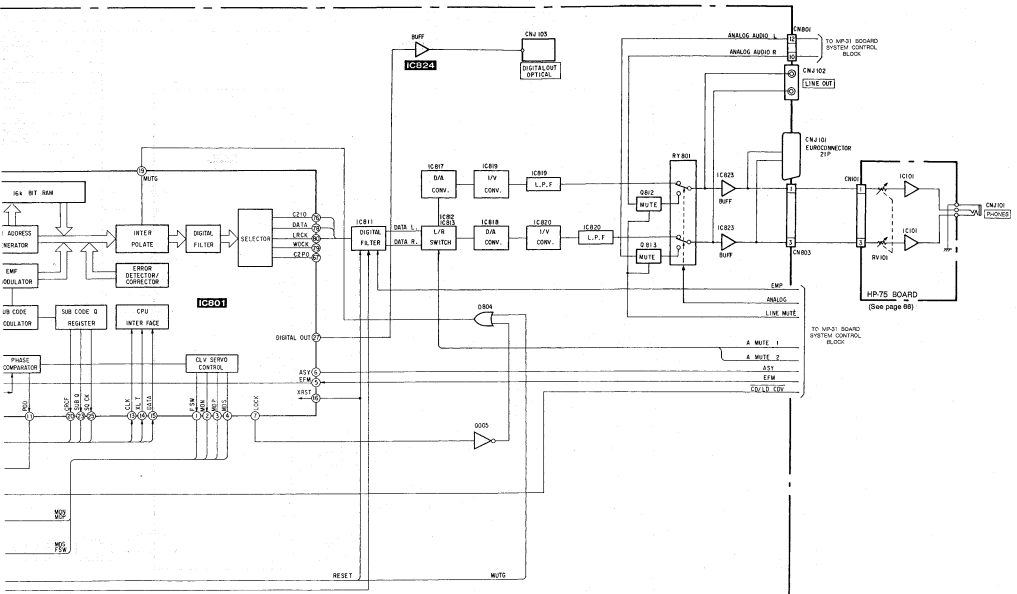
) BLOCK DIAGRAM

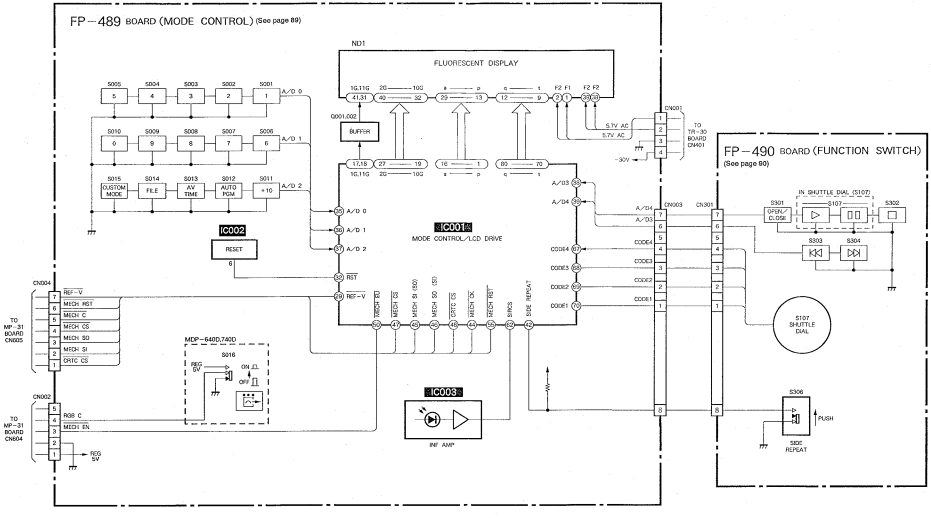



-33 BOARD (SERVO BLOCK) (See page 83)
Q104 RF AMP
RV108 RFN GAIN
Q105 RF BUFFER
IC1041/21
RV104 RFL GAIN
CN03
IC104
ADJ-3 (4V)
A,D,C,B
IC1042/21
B,D
BUFFER
FCS BAL
TRK BAL
CD/CDV FCS BAL
CD/CDV
IC105 (1/3)
DEFECT
IC106 (1/3)
IC1065/31
IC102
SERVO
DSUM
DAC
FE
BUFFER
FEI
EFGA
FCD
FLD
TE
TCD
TLD
TPO
TGS
TDR
SLP I
SLP O
CN105 FB
TCNT
FL
JUMP
RST
LACH
DATA
SCLK
CLK
SDR 2
SDR 1
LD PHASE SHIFT
CD PHASE SHIFT
IC109 FOCUS DRIVER
IC107 (1/2) FOCUS DRIVE
ANTI POWER RUSH
FPO
UP/DN
IC1053 (2/3)
TRACKING ERROR AMP
IC1062/31
IC110 TRACKING DRIVER
IC1072/21 TRACKING DRIVE
SLED PHASE SHIFT
IC1088 (1/2) SLED DRIVE
IC109 SLED DRIVER
SLED M
CN106
CN102
RF
PDI
DEFECT
CD CDV/CD
CD/CD CDV
TCNT
FL
JUMP
RESET
FT LATCH
SET DT
SET CK
SERVO CK
TO MP-31 BOARD CN602
MT-28 BOARD (SLED MOTOR) (See page 86)
SLED MOTOR M502

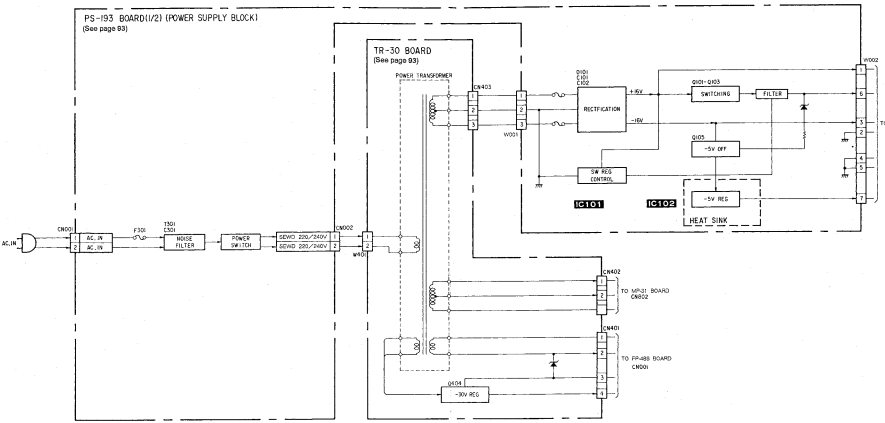
MP-31 BOARD (DIGITAL AUDIO BLOCK) (See page 65)




IC824
BUFF
CNJ105
DIGITAL OUT (OPTICAL)
ANALOG AUDIO L
ANALOG AUDIO R
CNB01
TO MP31 BOARD SYSTEM CONTROL BLOCK
CNJ102
LINE OUT
CNJ101
EUROCONNECTOR 21P
RY801
IC823
BUFF
IC101
CNI01
CNJ100
PHONES
RV101
CNI03
HP-75 BOARD
(See page 66)
IC801
MUTG
16k BIT RAM
ADDRESS GENERATOR
INTER POLATE
DIGITAL FILTER
SELECTOR
ERROR DETECTOR/ CORRECTOR
EMF ODULATOR
SUB CODE Q REGISTER
CPU INTER FACE
PHASE COMPARATOR
CLV SERVO CONTROL
C2IO
DATA
LRCK
WDCK
C2PO
DIGITAL OUT
ASY
EFM
XRST
RESET
MUTG
IC811
DIGITAL FILTER
DATA L
DATA R
IC812 IC813
L/R SWITCH
IC817
IC818
IC819
IC820
D/A CONV.
I/V CONV.
L.P.F
Q802
MUTE
Q803
Q804
Q805
EMP
ANALOG
LINE MUTE
TO MP31 BOARD SYSTEM CONTROL BLOCK
A MUTE 1
A MUTE 2
ASY
EFM
CD/LD CDV

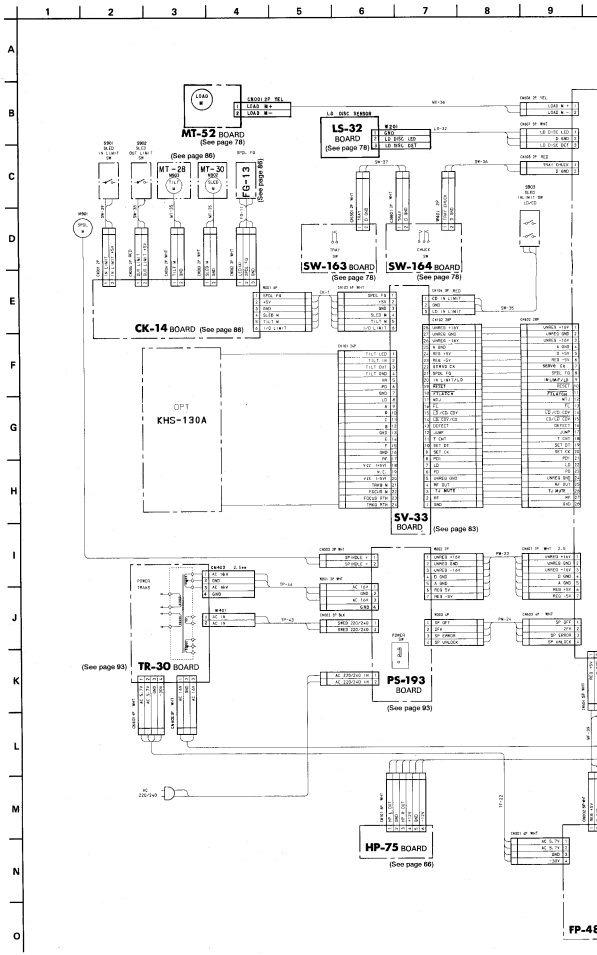

FP−489 BOARD (MODE CONTROL) (See page 89)
ND1
FLUORESCENT DISPLAY
S005
S004
S003
S002
S001
A/D 0
S010
S009
S008
S007
S006
A/D 1
S015
CUSTOM MODE
S014
FILE
S013
AV TIME
S012
AUTO PGM
S011
+10
A/D 2
Q001,002
BUFFER
5.7V AC
-30V
CN001
TO TR-30 BOARD CN401
FP−490 BOARD (FUNCTION SWITCH)
(See page 90)
IC002
RESET
IC001
MODE CONTROL/LCD DRIVE
CN003
CN301
IN SHUTTLE DIAL (S107)
S301
OPEN/CLOSE
S107
S302
S303
S304
S107 SHUTTLE DIAL
S306
PUSH
SIDE REPEAT
CN004
REF−V
MECH RST
MECH C
MECH CS
MECH SO
MECH SI
ORTC CS
TO MP−31 BOARD CN605
CN002
RGB C
MECH EN
TO MP−31 BOARD CN604
MDP−640D,740D
S016
IC003
INF AMP
SWITCH RD
MECH CS
MECH SI (SO)
MECH SO (SI)
ORTC CS
MECH CK
SWITCH RST
SWCS
SIDE REPEAT

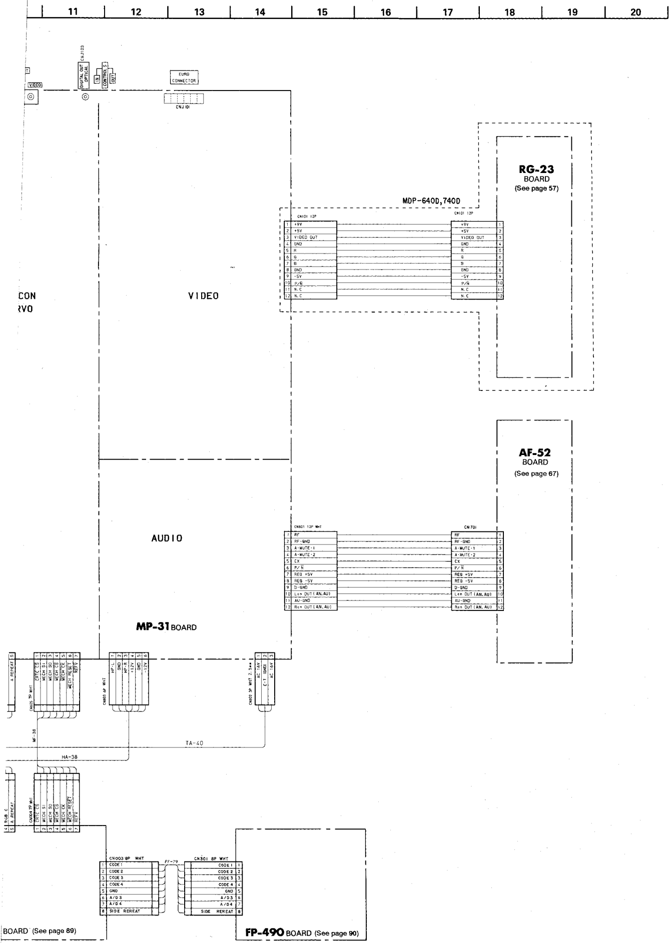
### 3-10. POWER BLOCK DIAGRAM



# SECTION 4
# PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

## 4-1. FRAME SCHEMATIC DIAGRAM




11
12
13
14
15
16
17
18
19
20
VIDEO
DIGITAL OUT OPTICAL
CNJ103
IN
CONTROL S
OUT
EURO CONNECTOR
CNJ101
CON
RVO
VIDEO
AUDIO
MP-31 BOARD
RG-23
BOARD
(See page 57)
MDP-640D,740D
CN101 12P
+9V
+5V
VIDEO OUT
GND
R
G
B
GND
-5V
P/N̄
N.C
N.C
AF-52
BOARD
(See page 67)
CN801 12P WHT
CN701
RF
RF·GND
A·MUTE·1
A·MUTE·2
CX
P/N̄
REG +5V
REG -5V
D·GND
Lch OUT (AN.AU)
AU·GND
Rch OUT (AN.AU)
CN605 7P WHT
CN004 7P WHT
CRTC CS
MECH SI
MECH SO
MECH CS
MECH CK
MECH RESET
REFV
A REPEAT
RGB C
CN803 6P WHT
HP·L
GND
HP·R
+12V
GND
-12V
CN802 3P WHT 2.5mm
AC 16V
C·T (GND)
AC 16V
MF-38
HA-38
TA-40
CN003 8P WHT
CN301 8P WHT
FF-79
CODE 1
CODE 2
CODE 3
CODE 4
GND
A/D 3
A/D 4
SIDE REREAT
BOARD (See page 89)
FP-490 BOARD (See page 90)

4-2

TH
BC
(In
in

Fo

Fc

**RG-23**
BOARD
(See page 57)

**AF-52**
BOARD
(See page 67)

## 4-2. PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS

**THIS NOTE IS COMMON FOR PRINTED WIRING BOARDS AND SCHEMATIC DIAGRAMS.**
**(In addition to this, the necessary note is printed in each block.)**

**For printed wiring boards:**

- ⊖—— : Indicates a lead wire mounted on the component side.
- ● : Through hole.
- ▒▒▒▒ : Pattern from the side which enables seeing.
- ▒▒▒▒ : Pattern of the rear side.
- ● : Circled numbers refer to waveforms.

**For schematic diagram:**

- Caution when replacing chip parts.
  New parts must be attached after removal of chip.
  Be careful not to heat the minus side of tantalum capacitor, because it is damaged by the heat.
- All resistors are in ohms, chip resistors are 1/10W unless otherwise noted.
  kΩ: 1000 Ω, MΩ: 1000kΩ.
- All capacitors are in μF unless otherwise noted. pF: μμF
  50V or less are not indicated except for electrolytics and tantaliums.
- All variable and adjustable resistors have characteristic curve B, unless otherwise noted.
- ⟨VR⟩ : nonflammable resistor.
- ⟨FUSE⟩ : fusible resistor.
- ⟨ ⟩ : panel designation.
- △ : internal component.
- ⟨ ⟩ : adjustment for repair.*
- ▬▬▬ : B + Line.*
- ▬▬▬ : B − Line.*
- Voltages are dc between measurement points and ground unless otherwise noted.*
- Readings are taken with a color-bar signal playback.*
- Readings are taken with a digital multimeter (DC10MΩ).*
- Voltage variations may be noted due to normal production tolerances.
- ⇨ : IN/OUT direction of B line (+, −).*
- Circled numbers refer to waveforms.*

When indicating parts by reference number, please include the board name.

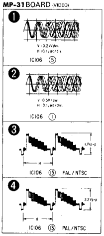
Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

- * : Indicated by the color red.

## MP-31 (VIDEO), RG-23 (RGB PROCESS) (MDP-640D/740D Model) PRINTED WIRING BOARDS

– Ref. No. MP-31 BOARD: 1,000 series, RG-23 BOARD: 6,000 Series –

**MP-31** BOARD (VIDEO)

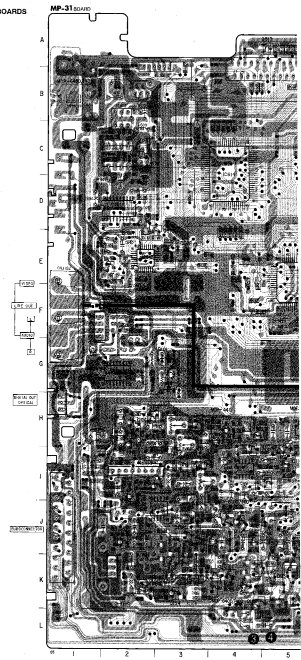



MP-31 BOARD

| | |
|---|---|
| D101 | G-3 |
| D104 | I-9 |
| D105 | I-9 |
| D601 | E-8 |
| D602 | E-8 |
| D603 | F-7 |
| D604 | C-13 |
| D605 | B-1 |
| D606 | A-1 |
| D607 | B-1 |
| D608 | E-3 |
| D609 | C-15 |
| D610 | C-15 |
| D611 | D-7 |
| D612 | C-15 |
| D613 | C-7 |
| D801 | G-14 |
| D802 | H-12 |
| D803 | H-13 |
| D804 | G-11 |
| D805 | F-12 |
| D806 | I-14 |
| D807 | I-14 |
| D808 | I-15 |
| D811 | I-14 |
| D812 | I-15 |
| D813 | I-15 |
| D815 | J-14 |
| D820 | L-15 |
| D821 | L-15 |
| D822 | K-15 |
| D823 | L-15 |
| D903 | F-13 |
| D910 | K-15 |
| D911 | K-15 |
| IC101 | K-2 |
| IC102 | H-5 |
| IC103 | I-4 |
| IC104 | I-2 |
| IC105 | J-3 |
| IC106 | J-6 |
| IC107 | J-6 |
| IC108 | L-10 |
| IC109 | J-8 |
| IC110 | H-8 |
| IC111 | J-10 |
| IC113 | J-7 |
| IC601 | D-8 |
| IC602 | G-8 |
| IC603 | F-8 |
| IC604 | E-7 |
| IC605 | D-15 |
| IC606 | D-15 |
| IC607 | E-15 |
| IC608 | D-14 |
| IC609 | D-7 |
| IC610 | C-2 |
| IC611 | D-2 |
| IC612 | E-2 |
| IC613 | E-5 |
| IC614 | C-4 |
| IC615 | B-14 |
| IC616 | B-13 |
| IC617 | B-15 |
| IC618 | A-10 |
| IC619 | D-8 |
| IC620 | C-15 |
| IC621 | E-14 |
| IC801 | G-14 |
| IC802 | G-15 |
| IC803 | G-14 |
| IC805 | G-13 |
| IC809 | H-15 |
| IC811 | F-12 |
| IC812 | G-12 |
| IC813 | H-12 |
| IC814 | J-15 |
| IC816 | J-12 |
| IC817 | I-11 |
| IC818 | K-11 |
| IC819 | J-13 |
| IC820 | K-13 |
| IC821 | J-15 |
| IC822 | K-15 |
| IC823 | K-14 |
| IC824 | G-2 |
| Q102 | H-4 |
| Q103 | H-4 |
| Q104 | H-3 |

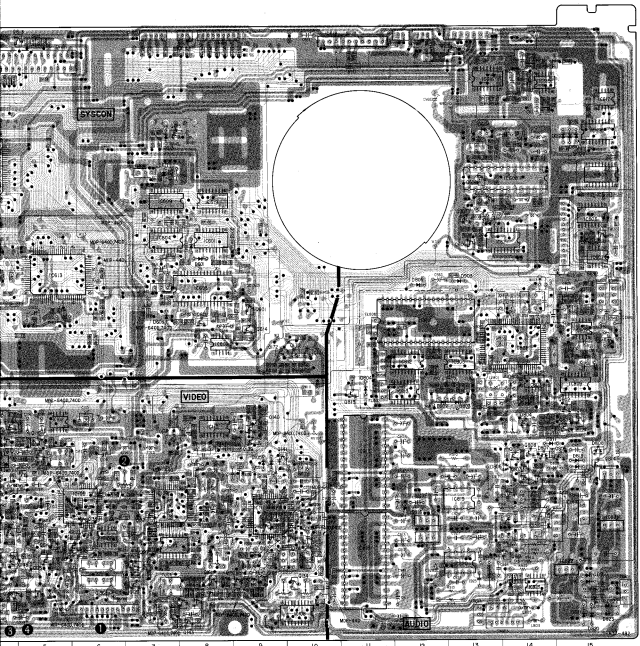
| | |
|---|---|
| Q105 | H-2 |
| Q106 | H-2 |
| Q107 | H-2 |
| Q108 | I-2 |
| Q109 | I-3 |
| Q110 | I-3 |
| Q111 | I-3 |
| Q112 | J-3 |
| Q114 | J-2 |
| Q115 | I-4 |
| Q116 | I-5 |
| Q117 | I-5 |
| Q118 | I-5 |
| Q119 | J-4 |
| Q120 | J-4 |
| Q121 | K-4 |
| Q122 | J-4 |
| Q123 | K-5 |
| Q124 | J-5 |
| Q125 | K-6 |
| Q126 | K-7 |
| Q128 | K-7 |
| Q129 | K-7 |
| Q132 | K-3 |
| Q134 | K-10 |
| Q135 | J-6 |
| Q136 | K-6 |
| Q137 | J-6 |
| Q138 | H-7 |
| Q139 | I-9 |
| Q140 | H-9 |
| Q141 | I-9 |
| Q142 | L-8 |
| Q143 | L-8 |
| Q144 | G-3 |
| Q145 | G-3 |
| Q148 | K-4 |
| Q150 | J-4 |
| Q151 | K-4 |
| Q152 | K-4 |
| Q153 | K-4 |
| Q154 | K-3 |
| Q155 | K-2 |
| Q156 | K-3 |
| Q157 | K-3 |
| Q158 | J-3 |
| Q159 | L-8 |
| Q160 | K-8 |
| Q161 | K-8 |
| Q162 | K-9 |
| Q163 | K-9 |
| Q164 | J-10 |
| Q165 | J-9 |
| Q166 | J-10 |
| Q167 | J-9 |
| Q168 | K-4 |
| Q169 | K-5 |
| Q601 | F-9 |
| Q602 | F-8 |
| Q603 | E-15 |
| Q604 | D-13 |
| Q605 | D-13 |
| Q606 | E-13 |
| Q607 | D-13 |
| Q608 | A-1 |
| Q609 | A-1 |
| Q610 | D-3 |
| Q611 | B-2 |
| Q612 | E-2 |
| Q613 | A-5 |
| Q614 | F-9 |
| Q615 | C-7 |
| Q618 | A-13 |
| Q801 | H-15 |
| Q802 | H-15 |
| Q803 | H-15 |
| Q804 | H-14 |
| Q806 | I-15 |
| Q807 | I-14 |
| Q808 | I-14 |
| Q809 | I-14 |
| Q810 | I-14 |
| Q811 | I-14 |
| Q812 | J-14 |
| Q813 | K-14 |
| Q814 | I-15 |
| Q815 | H-11 |

**MP-31** BOARD




**For printed wiring boards:**

- ○—— : indicates a lead wire mounted on the component side.
- ░░ : Pattern from the side which enables seeing.
- ▒▒ : Pattern of the rear side.
- ● : Circled numbers refer to waveforms.
- ○–┴–○ : Jumper wire connected to the ground pattern on the component side.
- ○–●–○ : Jumper wire connected to the pattern on the component side.




RG-23 BOARD

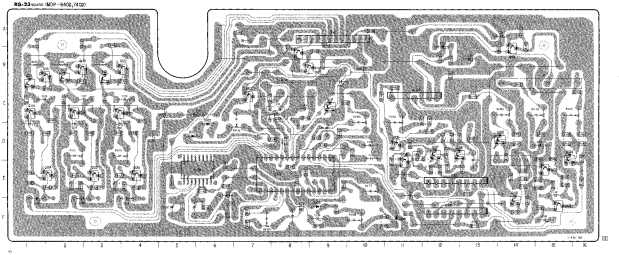
| | |
|---|---|
| D101 | D-5 |
| D102 | D-6 |
| D103 | F-9 |
| D104 | F-11 |
| IC101 | E-1 |
| IC102 | E-3 |
| IC103 | E-8 |
| IC104 | E-5 |
| IC105 | C-11 |
| Q105 | D-11 |
| D108 | D-12 |
| Q107 | D-12 |
| Q108 | D-11 |
| Q109 | D-10 |
| Q111 | C-9 |
| Q112 | C-7 |
| Q113 | B-8 |
| Q114 | C-1 |
| Q115 | B-1 |
| Q116 | B-1 |
| Q117 | C-2 |
| Q118 | B-2 |
| Q119 | B-3 |
| Q120 | B-3 |
| Q121 | B-2 |
| Q122 | B-6 |
| Q123 | B-6 |
| Q124 | E-2 |
| Q125 | E-3 |
| Q139 | E-4 |

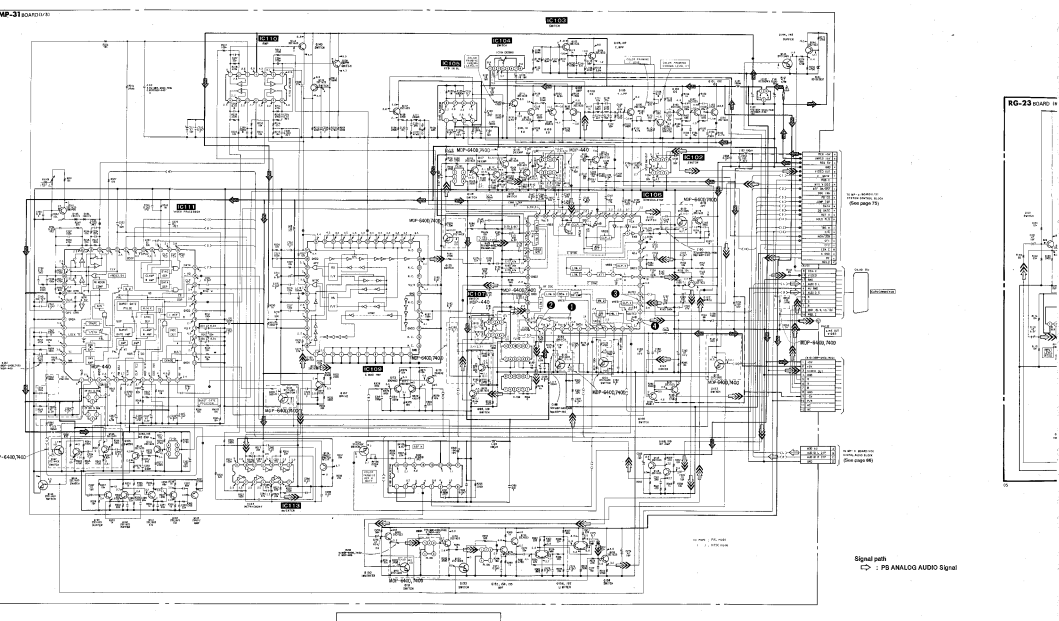
RG-23 BOARD

D101 D-5
D102 D-6
D103 F-6
D104 F-11

IC101 E-1
IC102 E-2
IC103 E-6
IC104 C-5
IC105 C-11

Q105 D-11
Q106 D-12
Q107 D-12
Q108 D-11
Q109 D-14
Q111 C-9
Q112 D-7
Q113 C-7
Q114 B-7
Q115 B-1
Q116 B-1
Q117 C-2
Q118 B-2
Q119 B-3
Q120 C-4
Q121 B-3
Q122 B-4
Q123 B-6
Q124 E-5
Q125 E-3
Q126 E-4




2
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11
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13
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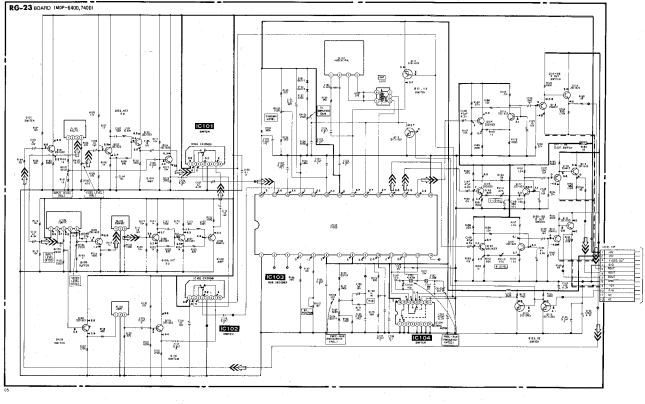
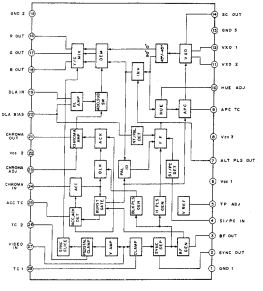
15
16
17
18
MP-31 BOARD (1/3)
RG-23 BOARD (1/3)
IC101
IC102
IC103
IC104
IC105
IC106
IC107
IC108
IC109
IC110
IC111
IC112
IC113
MDP-640D/740D
MDP-640D/740D (RGB)
MDP-640D/740D (SYNC)
MDP-640D/740D (VIDEO)
(See page 75)
(See page 66)
Signal path
: PB ANALOG AUDIO Signal

RG-23 BOARD (MHP-6400, 7600)

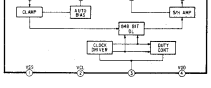


Signal path
: PB Y/CHROMA Signal

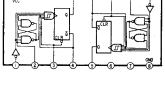
IC103 V7020




IC105 CXL5003M




IC108 SN74LS22INS



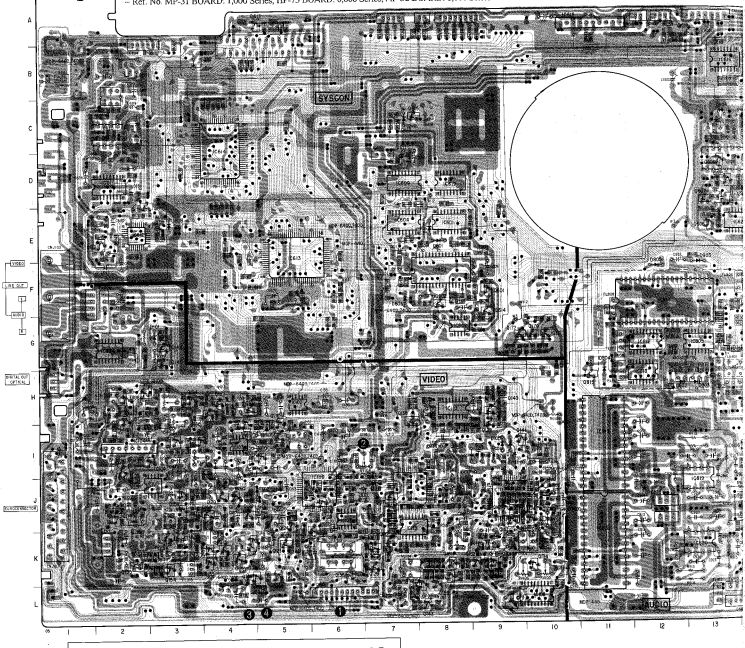
MP-31 BOARD

| | | | |
|---|---|---|---|
| D101 | G-3 | Q105 | H-2 |
| D102 | I-3 | Q106 | H-2 |
| D103 | I-3 | Q107 | H-2 |
| D601 | E-8 | Q108 | I-3 |
| D602 | E-8 | Q109 | I-3 |
| D603 | F-7 | Q110 | I-3 |
| D604 | C-13 | Q111 | I-3 |
| D605 | B-1 | Q112 | J-3 |
| D606 | A-1 | Q114 | J-2 |
| D607 | B-1 | Q115 | I-4 |
| D608 | F-3 | Q116 | I-5 |
| D609 | C-13 | Q117 | I-5 |
| D610 | C-15 | Q118 | I-5 |
| D611 | C-15 | Q119 | J-4 |
| D612 | E-15 | Q120 | J-4 |
| D613 | C-7 | Q121 | K-4 |
| D801 | A-14 | Q122 | J-4 |
| D802 | H-12 | Q123 | K-5 |
| D803 | H-12 | Q124 | J-5 |
| D804 | B-11 | Q125 | K-6 |
| D805 | F-12 | Q126 | K-7 |
| D806 | F-14 | Q128 | K-7 |
| D807 | F-14 | Q129 | K-7 |
| D808 | F-15 | Q132 | K-7 |
| D809 | F-15 | Q134 | K-10 |
| D811 | F-15 | Q135 | K-9 |
| D812 | F-15 | Q136 | J-5 |
| D813 | J-14 | Q137 | J-6 |
| D820 | L-15 | Q138 | H-7 |
| D821 | L-15 | Q139 | I-8 |
| D822 | K-15 | Q140 | H-8 |
| D823 | L-15 | Q141 | I-8 |
| D903 | F-13 | Q142 | L-8 |
| D910 | K-13 | Q143 | L-8 |
| D911 | K-15 | Q144 | G-3 |
| | | Q145 | K-4 |
| IC101 | K-2 | Q146 | K-4 |
| IC102 | H-5 | Q150 | J-4 |
| IC103 | I-4 | Q151 | K-3 |
| IC104 | I-2 | Q152 | K-4 |
| IC105 | J-3 | Q153 | K-4 |
| IC106 | J-5 | Q154 | K-3 |
| IC107 | J-5 | Q155 | K-2 |
| IC108 | I-10 | Q156 | K-3 |
| IC109 | I-8 | Q157 | K-3 |
| IC110 | K-8 | Q158 | J-3 |
| IC111 | J-10 | Q159 | L-8 |
| IC112 | J-7 | Q160 | K-8 |
| IC601 | E-8 | Q161 | K-8 |
| IC602 | C-8 | Q162 | K-8 |
| IC603 | F-8 | Q163 | K-9 |
| IC604 | C-7 | Q164 | J-10 |
| IC605 | D-15 | Q165 | J-8 |
| IC606 | D-15 | Q166 | J-10 |
| IC607 | C-15 | Q167 | J-9 |
| IC608 | D-14 | Q168 | K-4 |
| IC609 | D-1 | Q169 | K-5 |
| IC611 | D-2 | Q601 | F-9 |
| IC612 | D-2 | Q602 | F-8 |
| IC613 | C-3 | Q603 | D-15 |
| IC614 | C-6 | Q604 | D-13 |
| IC615 | B-14 | Q605 | D-15 |
| IC616 | B-13 | Q606 | B-13 |
| IC617 | B-13 | Q607 | A-1 |
| IC618 | A-10 | Q608 | A-1 |
| IC619 | D-8 | Q610 | D-3 |
| IC620 | C-15 | Q611 | B-2 |
| IC621 | D-14 | Q612 | C-2 |
| IC681 | D-14 | Q613 | A-5 |
| IC682 | D-14 | Q614 | F-9 |
| IC683 | B-15 | Q615 | C-7 |
| IC805 | E-13 | Q616 | A-13 |
| IC806 | A-13 | Q801 | H-15 |
| IC811 | I-12 | Q802 | H-15 |
| IC812 | C-12 | Q803 | H-15 |
| IC813 | H-12 | Q804 | H-14 |
| IC814 | H-13 | Q805 | I-15 |
| IC816 | J-12 | Q807 | I-14 |
| IC817 | I-11 | Q808 | I-14 |
| IC818 | K-13 | Q809 | I-14 |
| IC819 | K-13 | Q810 | I-14 |
| IC820 | K-13 | Q811 | I-14 |
| IC821 | J-15 | Q812 | J-14 |
| IC822 | K-15 | Q813 | K-14 |
| IC823 | K-14 | Q814 | K-15 |
| IC824 | D-2 | Q815 | K-11 |
| Q102 | K-4 | | |
| Q103 | K-4 | | |
| Q104 | K-3 | | |

**MP-31 (DIGITAL AUDIO, AUDIO OUTPUT), HP-75 (HEADPHONE AMP), AF-52 (ANALOG AUDIO)** PRINTED WIRING BOARDS

– Ref. No. MP-31 BOARD: 1,000 Series, HP-75 BOARD: 6,000 Series, AF-52 BOARD: 8,000 Series –

MP-31 BOARD




DIGITAL AUDIO DIGITAL AUDIO

boards:

has a lead wire mounted on the component

m from the side which enables seeing.

n of the rear side.

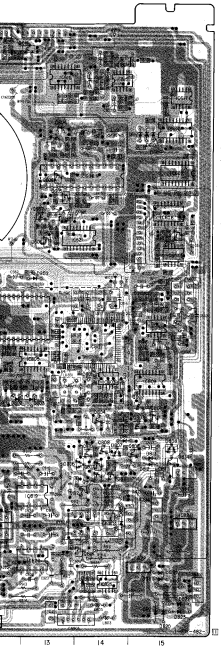
s numbers refer to waveforms.

er wire connected to the ground pattern on the

onent side.

er wire connected to the pattern on the compo-

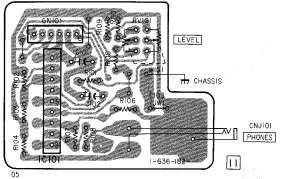
ide.



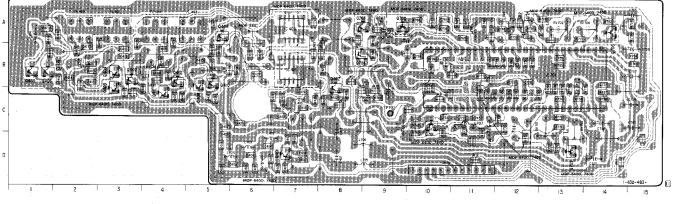
AF-52 BOARD

| | |
|---|---|
| IC401 | B-7 |
| IC402 | A-7 |
| IC701 | B-13 |
| Q401 | D-7 |
| Q402 | D-3 |
| Q403 | C-3 |
| Q404 | B-3 |
| Q405 | B-1 |
| Q406 | B-1 |
| Q407 | B-8 |
| Q408 | A-5 |
| Q409 | B-5 |
| Q410 | B-5 |
| Q411 | C-4 |
| Q412 | B-4 |
| Q701 | C-10 |
| Q702 | A-9 |
| Q703 | A-8 |
| Q704 | B-8 |
| Q705 | D-13 |
| Q706 | A-14 |

**HP-75** BOARD

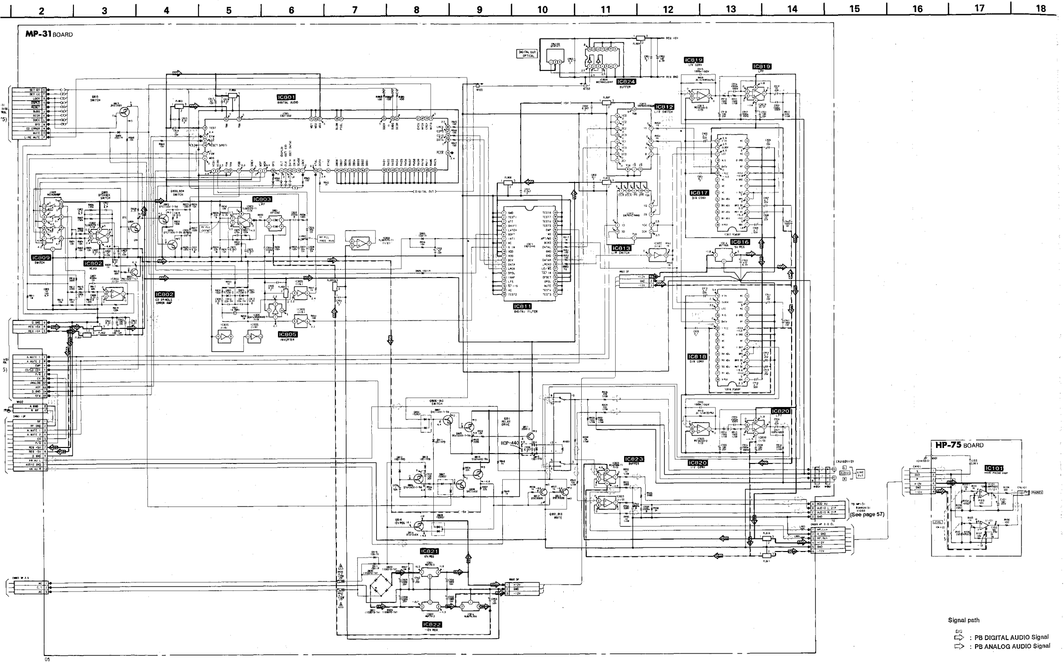



**AF-52** BOARD

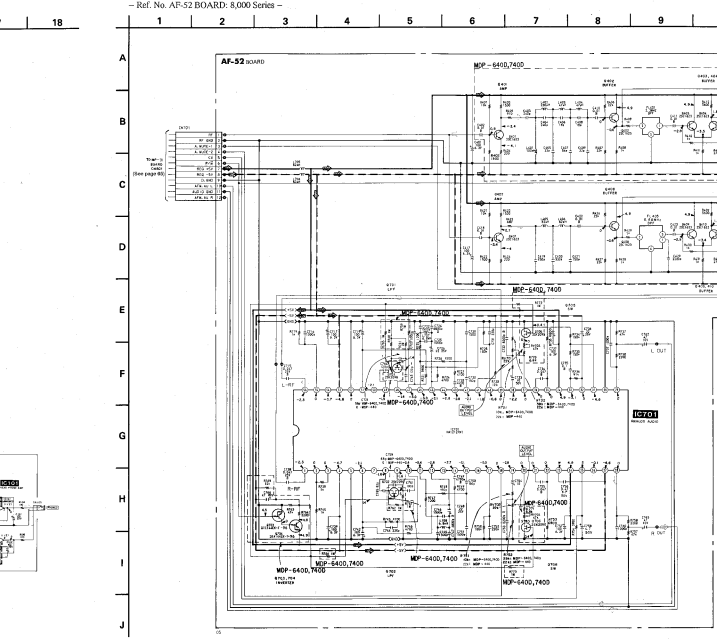


**TAL AUDIO, AUDIO OUTPUT), HP-75 (HEADPHONE AMP), AF-52 (ANALOG AUDIO) SCHEMATIC DIAGRAMS**

-31 BOARD: 1,000 Series, HP-75 BOARD: 6,000 Series, AF-52 BOARD: 8,000 Series –



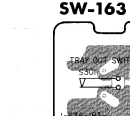
2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18
MP-31 BOARD
IC801
DIGITAL AUDIO
IC802
VCXO
IC802
CD SPINDLE ERROR AMP
IC803
LPF
IC805
INVERTER
IC809
SWITCH
IC811
DIGITAL FILTER
IC812
L/R SWITCH
IC813
L/R SWITCH
IC816
5V REG
IC817
D/A CONV
IC818
D/A CONV
IC819
I/V CONV
IC819
LPF
IC820
LPF
IC820
I/V CONV
IC821
12V REG
IC822
-12V REG
IC823
BUFFER
IC824
BUFFER
DIGITAL OUT OPTICAL
Q811
RELAY DRIVE
Q812, 813
MUTE
HDP-440
LINE OUT
(See page 57)
HP-75 BOARD
IC101
HEAD PHONE AMP
PHONES
LEVEL
05
Signal path
DIG
: PB DIGITAL AUDIO Signal
: PB ANALOG AUDIO Signal




DIGITAL AUDIO Signal
ANALOG AUDIO Signal

**MP-31 (SYSTEM CONTROL, SPINDLE SERVO), SW-163 (TRAY SWITCH), LS-32 (LD SENSOR), SW-164 (CHUCK SWITCH), MT-52 (LOADING MOTOR)** PRINTED WIRING BOARDS
– Ref. No. MP-31 BOARD: 1,000 Series, SW-164 and MT-52 BOARDS: 2,000 Series, LS-32 BOARD: 3,000 Series, SW-163 BOARD: 5,000 Series –

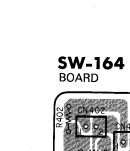
## SW-163 BOARD




## LS-32 BOARD




## SW-164 BOARD




S401
CHUCK
UP/DOWN SWITCH

CHUCK UP — CHUCK DOWN

## MT-52 BOARD



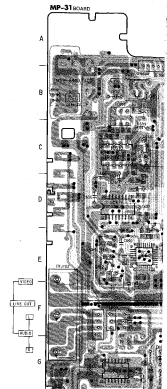

I-634-959-

**For printed wiring boards:**

- ★ o——— : Indicates a lead wire mounted on the component side.
- ★ ▨▨▨ : Pattern from the side which enables seeing.
- ★ ▩▩▩ : Pattern of the rear side.
- ★ ● : Circled numbers refer to waveforms.
- ★ o—+—o : Jumper wire connected to the ground pattern on the component side.
- ★ o—+—o : Jumper wire connected to the pattern on the component side.

MP-31 BOARD

| | | | |
|---|---|---|---|
| D101 | G-3 | Q105 | H-2 |
| D104 | I-3 | Q106 | H-2 |
| D105 | I-5 | Q107 | H-2 |
| D501 | F-8 | Q108 | I-2 |
| D502 | F-8 | Q109 | I-3 |
| D503 | F-7 | Q110 | I-3 |
| D504 | G-13 | Q111 | I-3 |
| D505 | A-1 | Q112 | J-3 |
| D506 | A-1 | Q113 | J-3 |
| D601 | B-1 | Q125 | I-4 |
| D606 | E-3 | Q126 | I-5 |
| D609 | C-15 | Q127 | I-5 |
| D610 | C-15 | Q128 | I-5 |
| D611 | D-7 | Q129 | J-4 |
| D612 | C-15 | Q130 | J-4 |
| D613 | C-7 | Q131 | E-4 |
| D801 | G-14 | Q132 | J-4 |
| D802 | H-12 | Q133 | E-5 |
| D803 | H-12 | Q134 | J-5 |
| D804 | G-13 | Q135 | E-7 |
| D805 | F-12 | Q136 | K-7 |
| D806 | I-14 | Q139 | K-7 |
| D807 | I-14 | Q140 | K-7 |
| D808 | I-15 | Q152 | E-3 |
| D811 | I-14 | Q154 | K-10 |
| D812 | I-15 | Q155 | J-8 |
| D813 | I-15 | Q156 | E-8 |
| D815 | J-14 | Q157 | J-8 |
| D816 | I-15 | Q158 | H-7 |
| D821 | L-15 | Q159 | I-9 |
| D822 | K-15 | Q160 | I-9 |
| D823 | L-15 | Q161 | I-8 |
| D963 | F-13 | Q162 | L-8 |
| D910 | K-15 | Q163 | L-8 |
| D911 | K-15 | Q164 | E-5 |
| | | Q165 | G-3 |
| IC103 | K-3 | Q168 | K-4 |
| IC151 | I-4 | Q169 | J-4 |
| IC153 | I-4 | Q151 | K-4 |
| IC104 | I-2 | Q152 | K-4 |
| IC105 | J-3 | Q153 | K-4 |
| IC106 | J-6 | Q154 | K-3 |
| IC107 | J-6 | Q155 | K-3 |
| IC108 | L-10 | Q156 | K-3 |
| IC109 | J-8 | Q157 | K-3 |
| IC110 | H-8 | Q158 | J-3 |
| IC111 | J-10 | Q159 | L-8 |
| IC113 | J-7 | Q160 | K-8 |
| IC201 | D-8 | Q161 | K-8 |
| IC202 | D-8 | Q162 | K-9 |
| IC203 | F-8 | Q163 | K-9 |
| IC204 | E-7 | Q164 | J-10 |
| IC205 | D-15 | Q165 | J-9 |
| IC206 | D-15 | Q166 | J-10 |
| IC207 | E-15 | Q167 | K-9 |
| IC208 | D-14 | Q168 | K-8 |
| IC209 | D-7 | Q169 | K-5 |
| IC210 | C-2 | Q601 | F-8 |
| IC401 | D-2 | Q602 | F-8 |
| IC402 | D-2 | Q603 | E-15 |
| IC403 | C-5 | Q604 | D-13 |
| IC404 | D-5 | Q605 | D-13 |
| IC501 | K-14 | Q606 | E-13 |
| IC502 | D-14 | Q607 | B-13 |
| IC503 | A-15 | Q608 | A-1 |
| IC504 | A-10 | Q609 | A-11 |
| IC505 | B-8 | Q610 | B-3 |
| IC520 | C-15 | Q611 | B-2 |
| IC521 | E-14 | Q612 | A-2 |
| IC801 | D-14 | Q613 | A-3 |
| IC802 | G-15 | Q614 | F-8 |
| IC803 | D-14 | Q615 | C-7 |
| IC805 | G-13 | Q616 | A-12 |
| IC809 | H-15 | Q801 | H-15 |
| IC811 | F-12 | Q802 | H-15 |
| IC812 | H-12 | Q803 | H-15 |
| IC813 | H-12 | Q804 | H-14 |
| IC818 | J-12 | Q805 | I-15 |
| IC819 | I-13 | Q806 | I-14 |
| IC820 | K-11 | Q809 | I-14 |
| IC821 | J-15 | Q810 | I-14 |
| IC822 | K-15 | Q811 | I-14 |
| IC823 | K-14 | Q812 | J-14 |
| IC824 | G-2 | Q813 | K-14 |
| | | Q814 | I-15 |
| D202 | K-6 | Q815 | H-11 |
| D203 | K-6 | | |
| D204 | K-5 | | |

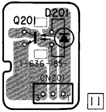


## SENSOR), SW-164 (CHUCK SWITCH), MT-52 (LOADING MOTOR) PRINTED WIRING BOARDS

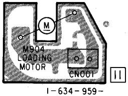
RD: 3,000 Series, SW-163 BOARD: 5,000 Series --

11

**LS-32** BOARD



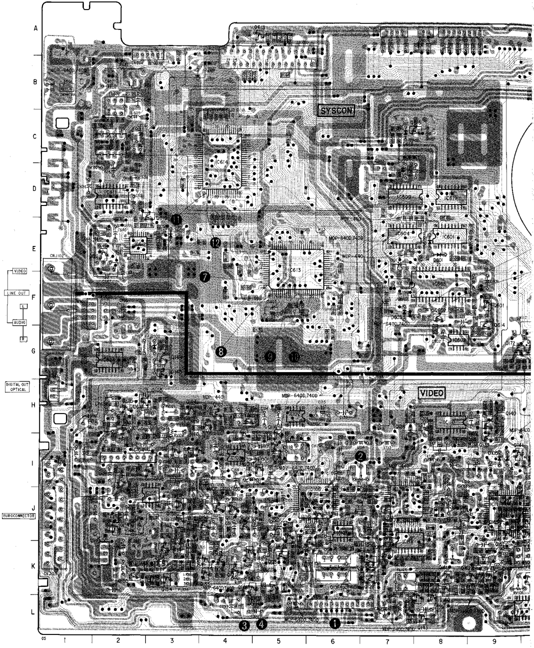

**MT-52** BOARD




MP-31 BOARD

| | | | |
|---|---|---|---|
| D101 | G-3 | Q105 | H-2 |
| D104 | I-9 | Q106 | H-2 |
| D105 | I-9 | Q107 | H-2 |
| D601 | E-8 | Q108 | I-2 |
| D602 | E-8 | Q109 | I-3 |
| D603 | F-7 | Q110 | I-3 |
| D604 | C-13 | Q111 | I-3 |
| D605 | B-1 | Q112 | J-3 |
| D606 | A-1 | Q114 | J-2 |
| D607 | B-1 | Q115 | I-4 |
| D608 | E-3 | Q116 | I-5 |
| D609 | C-15 | Q117 | I-5 |
| D610 | C-15 | Q118 | I-5 |
| D611 | D-7 | Q119 | J-4 |
| D612 | C-15 | Q120 | J-4 |
| D613 | C-7 | Q121 | K-4 |
| D801 | G-14 | Q122 | J-4 |
| D802 | H-12 | Q123 | K-5 |
| D803 | H-13 | Q124 | J-5 |
| D804 | G-11 | Q125 | K-6 |
| D805 | F-12 | Q126 | K-7 |
| D806 | I-14 | Q128 | K-7 |
| D807 | I-14 | Q129 | K-7 |
| D808 | I-15 | Q132 | K-3 |
| D811 | I-14 | Q134 | K-10 |
| D812 | I-15 | Q135 | J-6 |
| D813 | I-15 | Q136 | K-6 |
| D815 | J-14 | Q137 | J-6 |
| D820 | L-15 | Q138 | H-7 |
| D821 | L-15 | Q139 | I-9 |
| D822 | K-15 | Q140 | H-9 |
| D823 | L-15 | Q141 | I-9 |
| D903 | F-13 | Q142 | L-8 |
| D910 | K-15 | Q143 | L-8 |
| D911 | K-15 | Q144 | G-3 |
| | | Q145 | G-3 |
| IC101 | K-2 | Q148 | K-4 |
| IC102 | H-5 | Q150 | J-4 |
| IC103 | I-4 | Q151 | K-4 |
| IC104 | I-2 | Q152 | K-4 |
| IC105 | J-3 | Q153 | K-4 |
| IC106 | J-6 | Q154 | K-3 |
| IC107 | J-6 | Q155 | K-2 |
| IC108 | L-10 | Q156 | K-3 |
| IC109 | J-8 | Q157 | K-3 |
| IC110 | H-8 | Q158 | J-3 |
| IC111 | J-10 | Q159 | L-8 |
| IC113 | J-7 | Q160 | K-8 |
| IC601 | D-8 | Q161 | K-8 |
| IC602 | G-8 | Q162 | K-9 |
| IC603 | F-8 | Q163 | K-9 |
| IC604 | E-7 | Q164 | J-10 |
| IC605 | D-15 | Q165 | J-9 |
| IC606 | D-15 | Q166 | J-10 |
| IC607 | E-15 | Q167 | J-9 |
| IC608 | D-14 | Q168 | K-4 |
| IC609 | D-7 | Q169 | K-5 |
| IC610 | C-2 | Q601 | F-9 |
| IC611 | D-2 | Q602 | F-8 |
| IC612 | E-2 | Q603 | E-15 |
| IC613 | E-5 | Q604 | D-13 |
| IC614 | C-4 | Q605 | D-13 |
| IC615 | B-14 | Q606 | E-13 |
| IC616 | B-13 | Q807 | D-13 |
| IC617 | B-15 | Q608 | A-1 |
| IC618 | A-10 | Q609 | A-1 |
| IC619 | D-8 | Q610 | D-3 |
| IC620 | C-15 | Q611 | B-2 |
| IC621 | E-14 | Q612 | E-2 |
| IC801 | G-14 | Q613 | A-5 |
| IC802 | G-15 | Q614 | F-9 |
| IC803 | G-14 | Q615 | C-7 |
| IC805 | G-13 | Q618 | A-13 |
| IC809 | H-15 | Q801 | H-15 |
| IC811 | F-12 | Q802 | H-15 |
| IC812 | G-12 | Q803 | H-15 |
| IC813 | H-12 | Q804 | H-14 |
| IC814 | J-15 | Q806 | I-15 |
| IC816 | J-12 | Q807 | I-14 |
| IC817 | I-11 | Q808 | I-14 |
| IC818 | K-11 | Q809 | I-14 |
| IC819 | J-13 | Q810 | I-14 |
| IC820 | K-13 | Q811 | I-14 |
| IC821 | J-15 | Q812 | J-14 |
| IC822 | K-15 | Q813 | K-14 |
| IC823 | K-14 | Q814 | I-15 |
| IC824 | G-2 | Q815 | H-11 |
| Q102 | H-4 | | |
| Q103 | H-4 | | |
| Q104 | H-3 | | |

**MP-31** BOARD



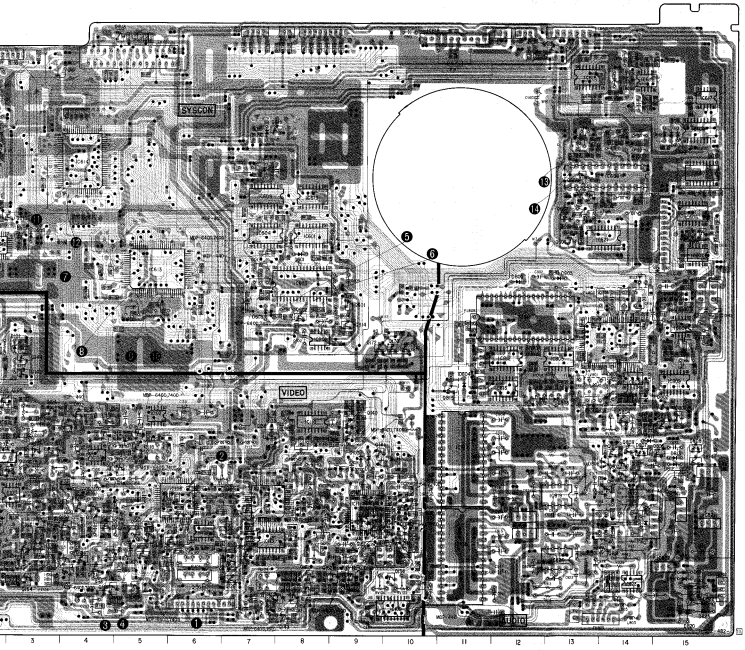



**SYSTEM CONTROL SYSTEM CONTROL**





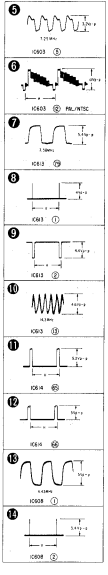
**SY**

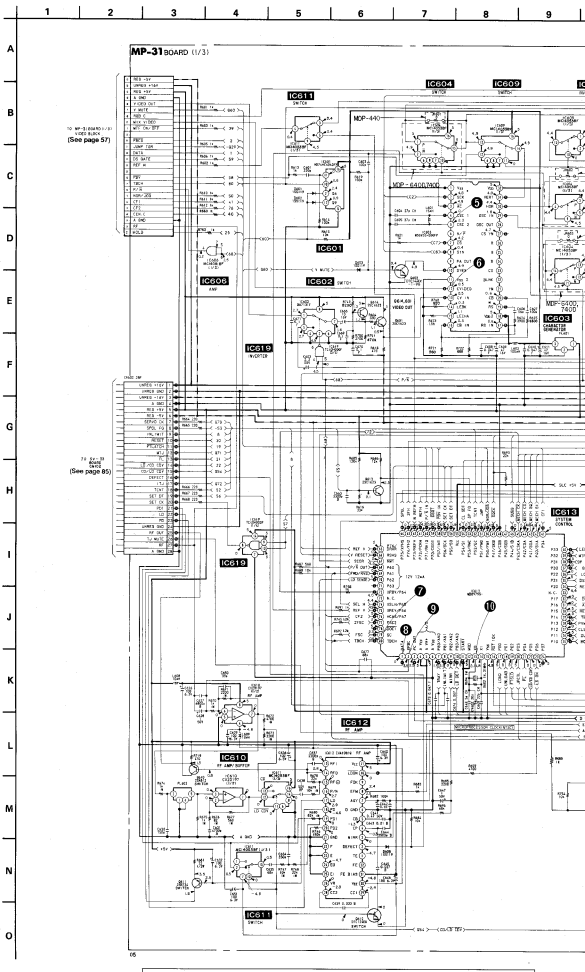


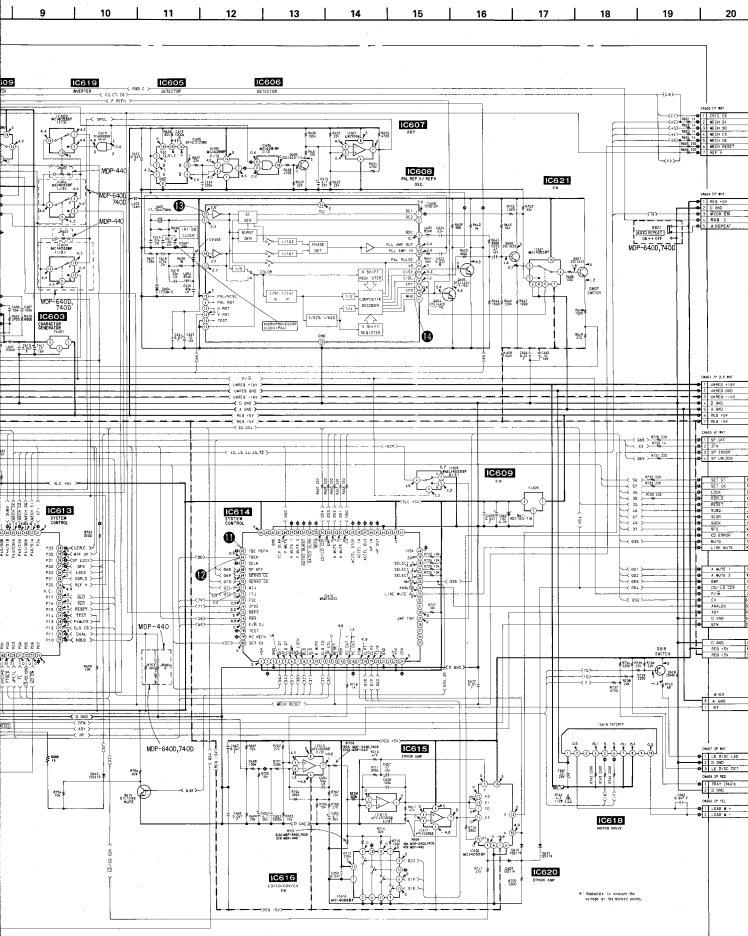


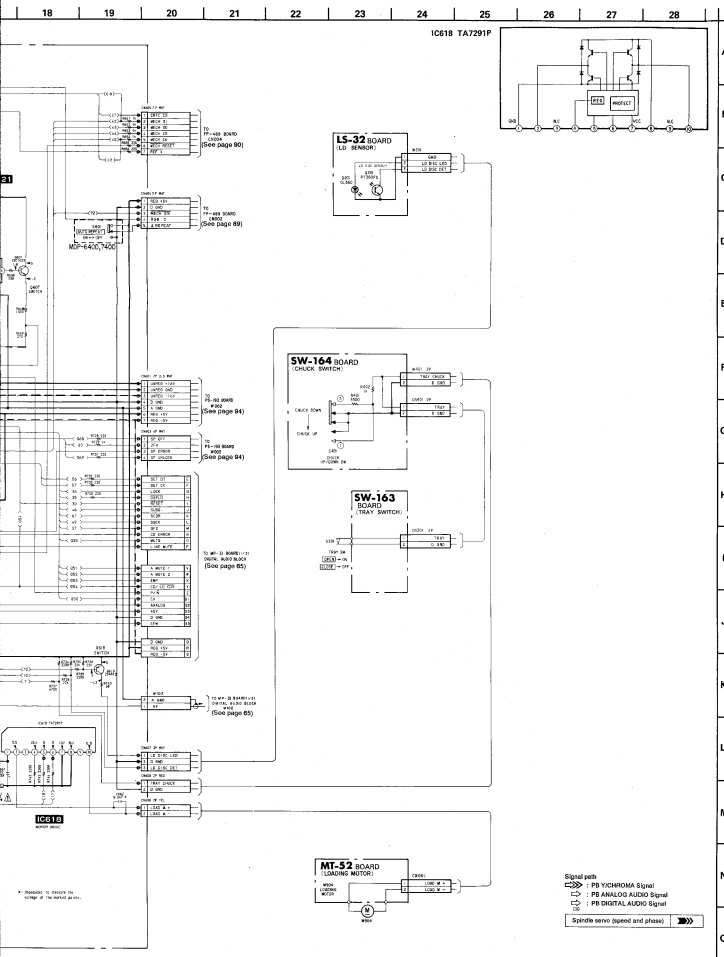

**SYSTEM CONTROL SYSTEM CONTROL**

**MP-31** BOARD (SYSCON)

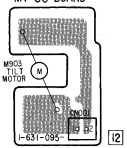



MP-31 BOARD (1/3)
IC811
SWITCH
IC804
IC809
IC801
IC802
SW/CTRL
IC806
AMP
IC819
INVERTER
IC613
SYSTEM CONTROL
IC619
IC612
RF AMP
IC810
RF AMP SWITCH
IC811
SWITCH
MDP-440
MDP-640D/660D
MDP-660D/760D
IC603
SERVO/DIGITAL SIGNAL PROCESSOR
TO MP-32 BOARD (1/3) VIDEO BLOCK
(See page 57)
TO SY-71 BOARD
(See page 85)

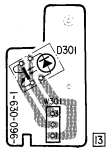

9
10
11
12
13
14
15
16
17
18
19
20
IC619
IC605
IC606
IC607
IC608
IC621
IC603
IC613
IC614
IC609
IC615
IC616
IC618
IC620
MDP-440
MDP-6400,7400
SYSTEM CONTROL
SERVO
DSP
ERROR AMP
MOTOR DRIVE
PLL REF 1/ REF4
CHASS SP (+3.5 W)
CHASS SP (W)
CHASS SP (R)
CHASS SP (F)
CHASS SP (MD)
CHASS FP (W)
CHASS FP (F)
CHASS FP (R)
CHASS FP (MD)
CHASS FP (T)
CHASS FP (MT)
CHASS FP (+3.5 W)
CHASS FP (+3.5 W)
CHASS FP (MD)
CHASS FP (MT)
CHASS FP (T)
CHASS FP (F)
CHASS FP (R)
CHASS FP (


IC618 TA7291P
PRE
PROTECT
GND
N.C
N.C
N.C
LS-32 BOARD
(LD SENSOR)
SW-164 BOARD
(CHUCK SWITCH)
SW-163
BOARD
(TRAY SWITCH)
MT-52 BOARD
(LOADING MOTOR)
IC618
MOTOR DRIVE
Signal path
: PB Y/CHROMA Signal
: PB ANALOG AUDIO Signal
: PB DIGITAL AUDIO Signal
Spindle servo (speed and phase)

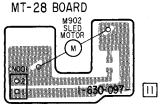
MT-30 BOARD



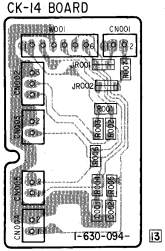

FG-13 BOARD



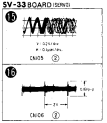

MT-28 BOARD




CK-14 BOARD

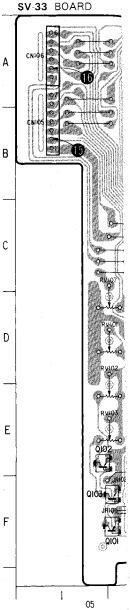



SV-33 BOARD (SERVO)




| SV-33 BOARD | |
|---|---|
| D101 | E-5 |
| D102 | B-5 |
| D103 | C-4 |
| IC102 | B-4 |
| IC103 | B-4 |
| IC104 | F-3 |
| IC106 | B-3 |
| IC107 | A-5 |
| IC108 | A-5 |
| IC109 | B-3 |
| IC11E | A-5 |
| IC111 | C-5 |
| Q101 | F-2 |
| Q102 | E-1 |
| Q103 | F-2 |
| Q104 | F-2 |
| Q105 | E-2 |
| Q106 | A-5 |
| Q107 | E-3 |

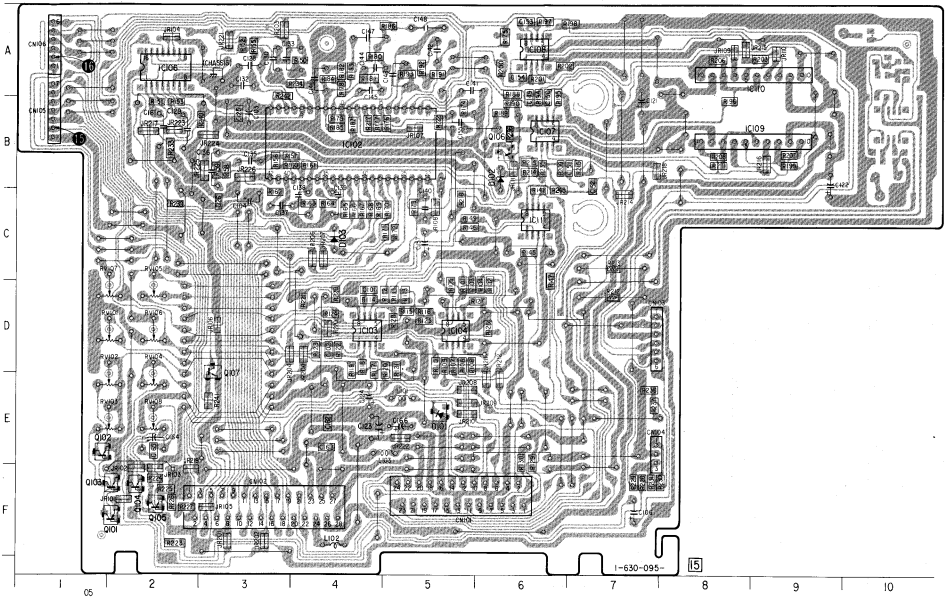
SV-33 BOARD

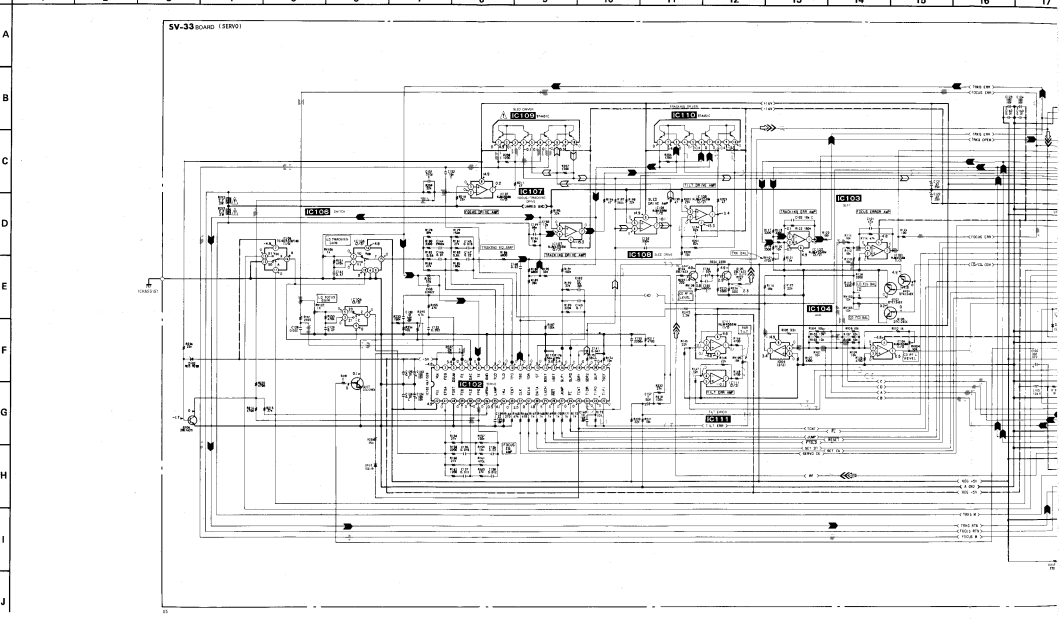



**For printed wiring boards:**

- ○——: indicates a lead wire mounted on the component side.
- ▨▨▨: Pattern from the side which enables seeing.
- ▩▩▩▩: Pattern of the rear side.
- ●: Circled numbers refer to waveforms.
- ○—+—○: Jumper wire connected to the ground pattern on the component side.
- ○—+—○: Jumper wire connected to the pattern on the component side.

## SV-33 BOARD


A
B
C
D
E
F
1
2
3
4
5
6
7
8
9
10
05
IC105
IC106
IC108
IC107
IC109
IC110
IC103
IC104
Q107
Q106
Q105
Q104
Q103
Q102
Q101
CN105
CN106
CN102
CN101
CN103
CN104
1-630-095-
15


1
2
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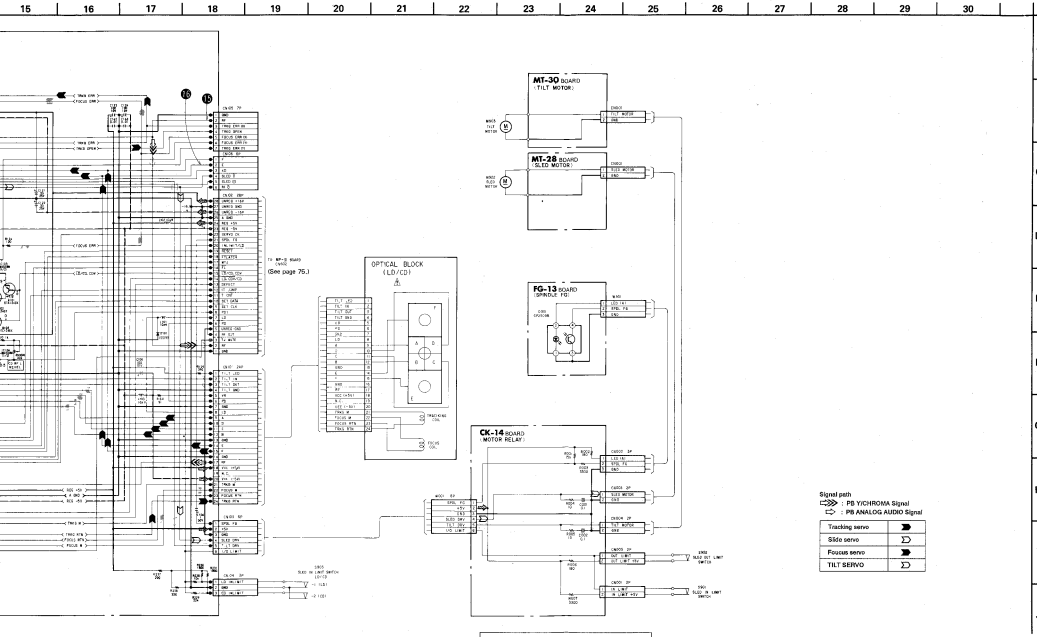
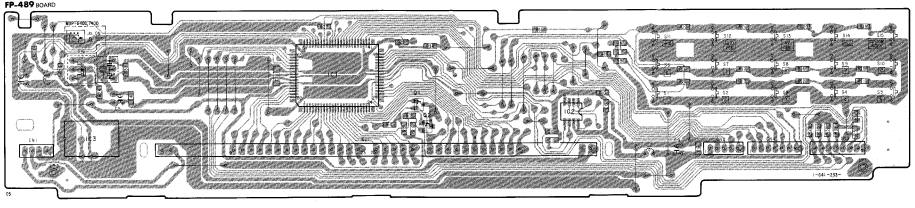
8
9
10
11
12
13
14
15
16
17
A
B
C
D
E
F
G
H
I
J
SV-33 BOARD (SERVO)
IC100
IC107
IC106
IC110
IC105
IC108
IC104
IC102
IC111


MT-30 BOARD (TILT MOTOR)
MT-28 BOARD (SLED MOTOR)
FG-13 BOARD (SPINDLE FG)
CK-14 BOARD (MOTOR RELAY)
OPTICAL BLOCK (LD/CD)
(See page 75.)
Signal path
: PB Y/CHROMA Signal
: PB ANALOG AUDIO Signal
Tracking servo
Slide servo
Focus servo
TILT SERVO

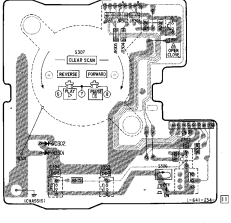


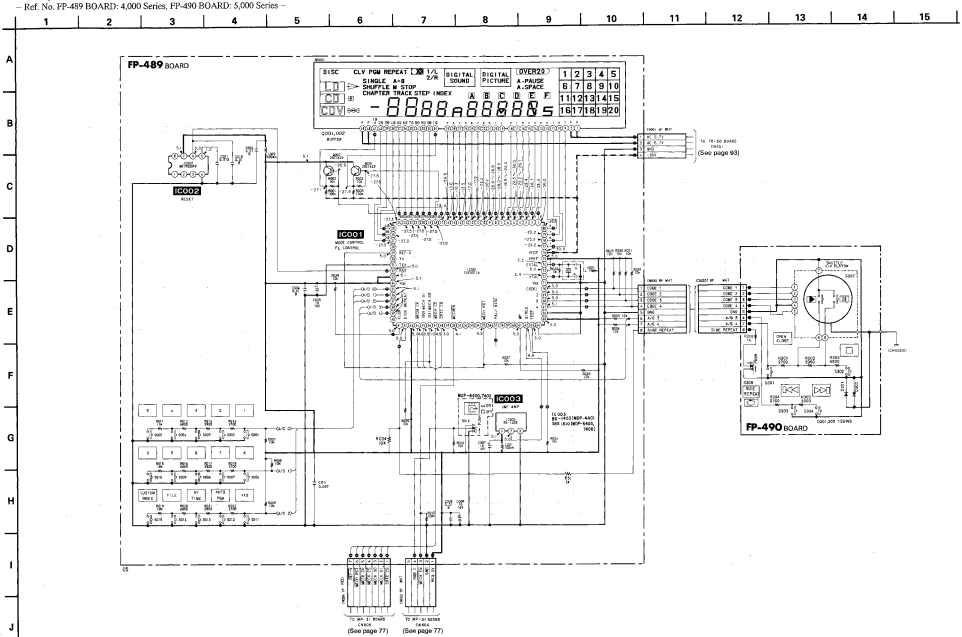
**SERVO SERVO**

**FP-489** BOARD

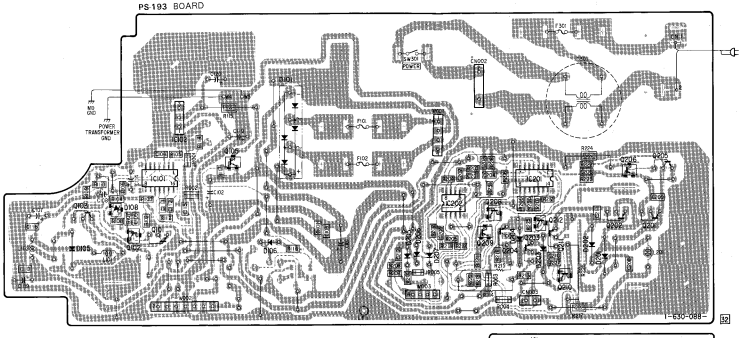


**FP-490** BOARD

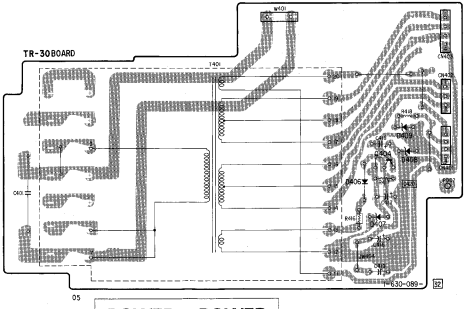



FP-489 BOARD
FP-490 BOARD
IC002
IC001
IC003
(See page 93)
(See page 77)
(See page 77)

PS-193 BOARD



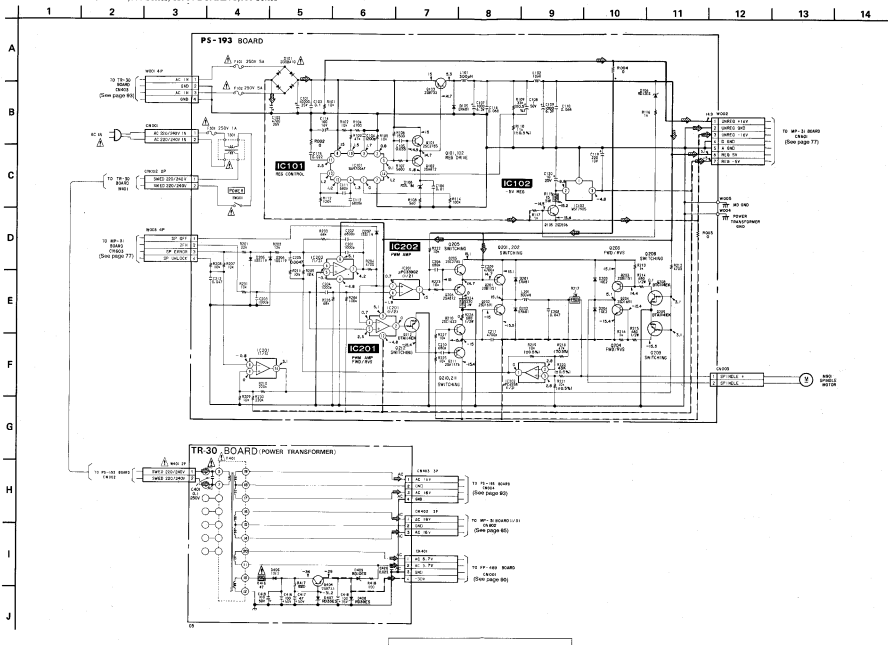

TR-30 BOARD




05



**POWER POWER**


PS-193 BOARD
TR-30 BOARD (POWER TRANSFORMER)
IC101
IC102
IC202
IC201

# SECTION 5
# EXPLODED VIEWS

## 3-4. SEMICONDUCTORS

BA7131F
LM2903M
MS1953AFP
RC4558M
TL082CPS
µPC4558G2

CXD1244S

M5045S-080FP



FMW1



D3SBA10



1SS226



CX20061

NJM-4560S-D

PT360FS

ERA81-006
RD1.6ES-B2
RD1.2ES-B2
RD1.0ES-B3
RD3.9ES-B2
RD39ES-B2
RD7.5ES-B2
1SS119
11ES2

10E2

BA9700AF
CXL5093M
MC14066BF
SN74HCU04NS
SN74HC74ANS
TC40H066F
TC74HCU04AF
µPC324G2
µPC339G2



CX20197
RC5532D-D
SBX1610-09

STA-451C

2SA1175-HFE
2SC2785-HFE

GL-360

HA11529

TA7291P

CXA1081Q

FC52M-S

HD14053BFP
MC14052BF
MC14053BF
MC74HC4053F
M5M72H032GS-K
SN74HC4040NS
SN74LS123NS
SN74LS221NS

TC9015P

2SB1151
2SD1681-K

GP-2S09-B

CXA1254Q
CXA1255Q
CXD1152-MS

2SB733-2
2SB733-S
2SB734-34

MA152WK

CXD1165Q
CXP50116-672Q
MB89795-127

DTA114EK
DTA124EK
DTC114EK
DTC124EK
DTC144EK
2SA1162
2SC1623
2SC1623-L7
2SC3326N

MSF7805
MSF7812
RC7809FA

2SD999CLCK

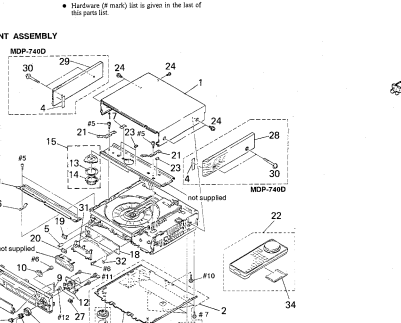
RD5.1M-B2
RD6.2M-B2

NOTE:

- -XX and -X mean standardized parts, so they may have some difference from the original one.
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- The mechanical parts with no reference number in the exploded views are not supplied.
- Hardware (# mark) list is given in the last of this parts list.

The components identified by mark Δ or dotted line with mark Δ are critical for safety.
Replace only with part number specified.

## 5-1. EXTERIOR ORNAMENT ASSEMBLY




| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 1 | 3-736-095-01 | CASE, UPPER (MDP-440/640D) | |
| 2 | 3-736-095-11 | CASE, UPPER (MDP-740D) | |
| 3 | 3-736-098-X | PLATE ASSY, BOTTOM (MDP-440/640D) | |
| 4 | 3-736-098-2 | PLATE ASSY, BOTTOM (MDP-740D) | |
| 5 | 3-941-015-11 | PLATE, BOTTOM | |
| 6 | 3-736-098-01 | SPACER | |
| 7 | 3-736-098-11 | SPACER (MDP-740D) | |
| 8 | 3-941-512-01 | KNOB (AC TYPE), LOV (MDP-740D) | |
| 9 | 3-941-512-11 | KNOB (AC TYPE), LOV (MDP-440/640D) | |
| 10 | 3-941-518-01 | BUTTON, PLAYBACK (MDP-740D) | |
| 11 | 3-941-519-01 | BUTTON, PLAYBACK (MDP-440/640D) | |
| 12 | 3-941-512-03 | RING, SHUTTLE (MDP-440/640D) | |
| 13 | 3-941-512-11 | RING, SHUTTLE (MDP-740D) | |
| 14 | X-2041-107-3 | DOOR ASSY (MDP-440/640D) | |
| 15 | X-2041-109-1 | DOOR ASSY (MDP-740D) | |
| 16 | 3-940-230-01 | SPRING (RING), TENSION | |
| 17 | 4-219-253-01 | BUMPER | |
| 18 | X-2041-108-1 | PANEL ASSY, FRONT (MDP-640D) | |
| 19 | X-2041-110-1 | PANEL ASSY, FRONT (MDP-740D) | |
| 20 | X-2041-113-3 | PANEL ASSY, FRONT (MDP-440) | |
| * 21 | A-6421-728-A | FP-488 BOARD, COMPLETE | |
| 22 | 3-736-101-01 | SPRING | |
| 23 | 3-737-854-01 | SHEET, HOLDER | |
| * 24 | A-6421-728-A | FP-488 BOARD, COMPLETE (MDP-640) | |
| * 25 | A-6421-729-A | FP-488 CHG BOARD, COMPLETE (MDP-740D) | |
| 26 | 3-736-101-01 | BUTTON, POWER (MDP-440/640D) | |
| 27 | 3-736-101-11 | BUTTON, POWER (MDP-740D) | |
| 28 | 3-736-651-01 | BUTTON, POWER (MDP-740D) | |
| 29 | 3-741-898-31 | KNOB, A/B (MDP-740D) | |
| 30 | 3-741-898-11 | KNOB, A/B (MDP-440/640D) | |
| 31 | 3-709-080-01 | SPACER | |
| 32 | 1-469-490-31 | REMOTE COMMANDER (SMT-333E) | |
| 33 | 3-611-847-00 | CUSHION | |
| 34 | 3-736-100-11 | SCREW, TAPPING | |
| 35 | 3-941-511-71 | BUTTON, STOP (MDP-740D) | |
| 36 | 3-941-511-81 | BUTTON, STOP (MDP-440/640D) | |
| 37 | 3-941-515-02 | HOLDER, BUTTON | |
| * 38 | 3-942-822-11 | BUTTON, REPEAT (MDP-740D) | |
| 39 | 3-941-511-61 | BUTTON, REPEAT (MDP-440/640D) | |
| 40 | X-2041-111-1 | WOOD (L) ASSY, SIDE (MDP-740D) | |
| 41 | X-2041-112-1 | WOOD (L) ASSY, SIDE (MDP-740D) | |
| 42 | 3-943-852-11 | SCREW (M3X22), TAPPING (MDP-740D) | |
| * 43 | 3-746-588-01 | HOLDER, FLD | |
| 44 | 3-325-254-01 | SPACER CA, LCD | |
| 45 | 4-868-848-01 | SHEET, CUSH | |
| 46 | 3-848-754-01 | LID, BATTERY CASE | |

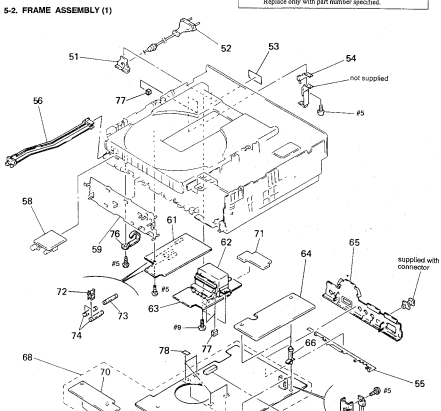


## 5-2. FRAME

| Ref. No. | Part |
|---|---|
| * 51 | 3-737 |
| △52 | 1-492 |
| * 53 | 3-947 |
| * 53 | 3-947 |
| * 53 | 3-947 |
| 54 | 3-737 |
| 55 | 3-737 |
| 56 | 3-737 |
| 57 | 3-737 |
| * 58 | 1-620 |
| * 59 | A-66 |
| * 61 | A-66 |
| 62 | 1-469 |
| * 63 | 1-469 |
| * 64 | A-66 |
| 65 | X-27 |

Note: The components identified by mark ⚠ or dotted line with mark ⚠ are cricical for safety.
Replace only with part number specified.

## 5-2. FRAME ASSEMBLY (1)

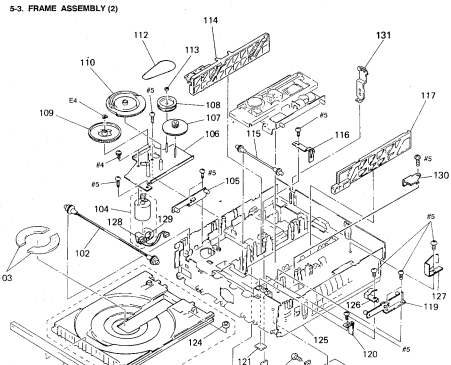



| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| * 51 | 3-727-436-01 | BRACKET, AC CORD | |
| △52 | 1-755-176-00 | CORD, POWER, 6X3 FUSE | |
| 53 | 3-945-172-01 | LABEL, MODEL NUMBER (NO.2) (MDP-640D) | |
| * 53 | 3-945-173-01 | LABEL, MODEL NUMBER (NO.2) (MDP-740D) | |
| * 53 | 3-945-179-01 | LABEL, MODEL NUMBER (NO.3) (MDP-640) | |
| 54 | 3-725-081-01 | SPRING | |
| GG | 3-727-488-01 | PLATE, GROUND, JACK | |
| 56 | 3-741-887-01 | LEVER, POWER SW | |
| 57 | 8-811-843-50 | CUSHION | |
| * 58 | 1-636-182-11 | RP-75 BOARD | |
| * 59 | A-6415-965-A | HOLDER ASSY, PC BOARD | |
| * 61 | 1-423-237-A | FP-183 (C) BOARD, COMPLETE | |
| △62 | 1-448-849-11 | TRANSFORMER, POWER (T401) | |
| * 63 | 1-636-488-21 | TP-30 BOARD | |
| * 64 | 1-642-182-A | RS-23 BOARD, COMPLETE (MDP-640D/740D) | |
| 65 | X-3749-148-1 | PLATE (F) ASSY, JACK | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| * 66 | 3-703-323-01 | SUPPORTER, PC BOARD | |
| * 67 | 1-569-421-11 | WIRE, FLAT TYPE 24P | |
| * 68 | A-6421-498-A | MP-31 BOARD, COMPLETE (MDP-440) | |
| * 68 | A-6421-732-A | MP-31 BOARD, COMPLETE (MDP-640D) | |
| * 68 | A-6421-729-A | MP-31 (DD) BOARD, COMPLETE (MDP-740D) | |
| * 70 | A-6421-371-A | AF-92 BOARD, COMPLETE (MDP-440/640D) | |
| * 70 | A-6421-735-A | AF-92 (DD) BOARD, COMPLETE (MDP-740D) | |
| △71 | 3-746-543-01 | COVER, TRANSFORMER | |
| * 72 | 1-533-185-11 | HOLDER, FUSE | |
| △73 | 1-532-078-00 | FUSE, TIME-LAG (T3A 250V) (F301) | |
| △74 | 1-532-210-00 | FUSE, TIME-LAG (T5A 250V) (F101, F102) | |
| * 75 | 3-920-164-01 | HEAT SINK | |
| * 76 | 3-701-422-00 | HOLDER, WIRE | |
| * 77 | 3-741-883-01 | CUSHION (RT), RUBBER | |
| 78 | 3-831-441-50 | CUSHION (S) | |

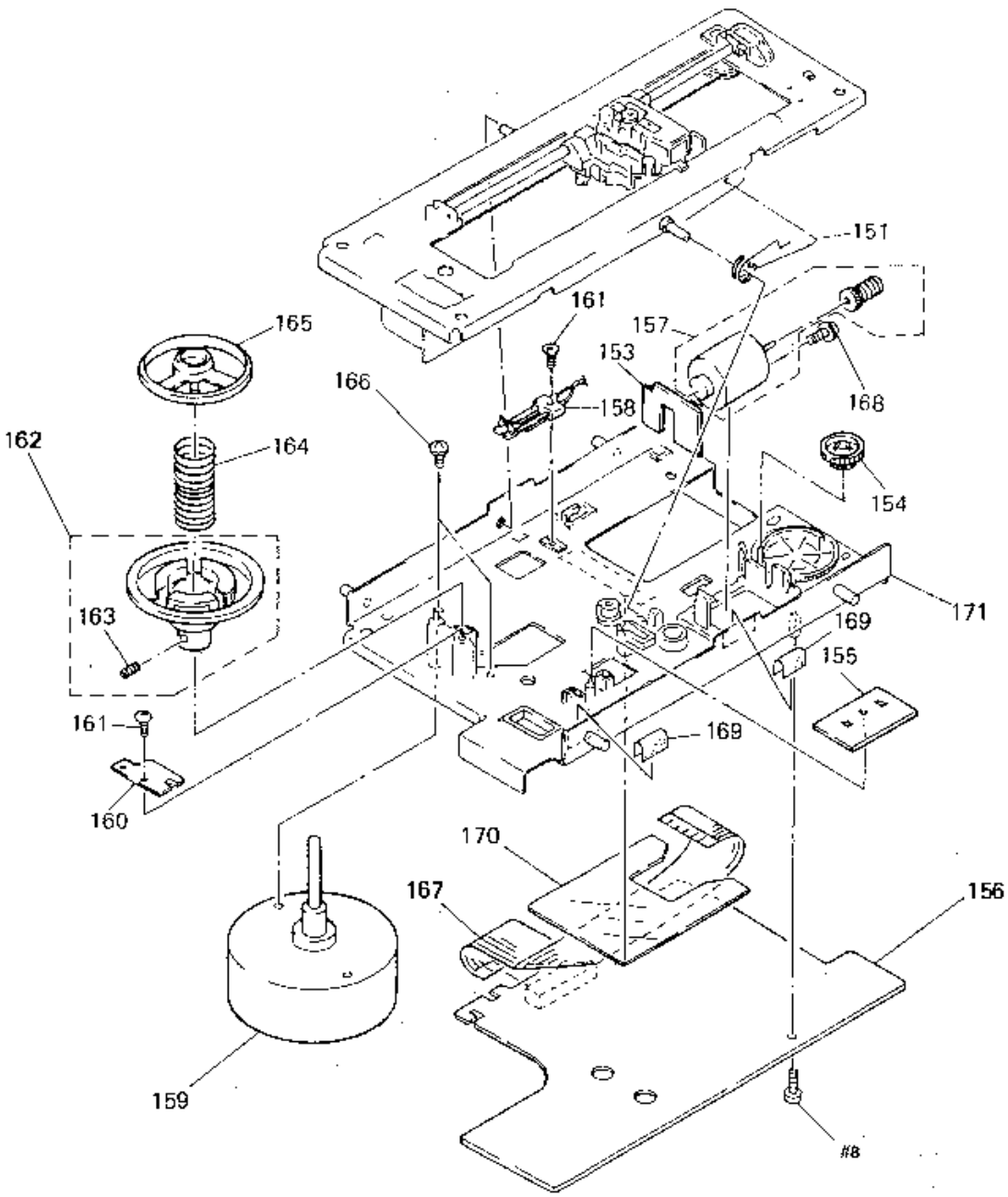


## 5-3. FRAME ASSEMBLY (2)




| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 101 | X-3725-032-1 | TRAY ASSY (MDP-740D) | |
| 101 | X-3725-037-X | TRAY ASSY (MDP-640/640D) | |
| 102 | X-3725-060-1 | GEAR ASSY, PHASE | |
| 103 | 2-725-039-01 | SHEET, CD | |
| 104 | A-6415-355-A | MOTOR BLOCK ASSY (D), THREADING | |
| 105 | X-3725-071-1 | GUIDE ASSY (L), TRAY | |
| * 105 | X-3725-082-1 | BASE ASSY, THREADING | |
| 107 | 3-725-037-01 | GEAR, MIDWAY | |
| 108 | 3-725-036-01 | PULLEY (A) | |
| 109 | 3-725-035-01 | GEAR, TRAY | |
| 110 | 3-725-056-01 | CAM, DRIVING | |
| 111 | 3-746-504-02 | COVER, TRAY (MDP-640/840D) | |
| 111 | 3-746-504-11 | COVER, TRAY (MDP-740D) | |
| 112 | 3-536-779-00 | BELT, DRIVE | |
| 113 | 3-669-595-00 | WASHER (2), STOPPER | |
| 114 | 3-725-053-01 | RACK (LEFT) | |
| 115 | X-3725-008-1 | GEAR ASSY, MD PHASE | |
| 116 | 3-737-401-01 | SPRING (L) | |
| 117 | 3-725-052-01 | RACK (RIGHT) | |
| 118 | 8-759-245-79 | IC M51793FS | |
| 119 | X-3725-070-1 | GUIDE ASSY (R), TRAY | |
| 120 | 3-737-402-01 | SPRING (C) | |
| * 121 | 1-636-163-11 | SW-163 BOARD | |
| * 122 | 1-636-164-11 | SW-164 BOARD | |
| * 123 | 1-636-165-11 | LS-32 BOARD | |
| * 124 | 4-914-248-01 | STOPPER, RUBBER | |
| * 125 | 3-942-221-51 | FRAME | |
| 126 | 3-737-448-01 | SPRING, LEAF | |
| 127 | 3-746-525-01 | SPRING, TRAY | |
| 128 | 1-506-481-11 | CONNECTOR 2P, MALE (CN001) | |
| 129 | 1-161-983-00 | CERAMIC, 0.1uF 10% 50V (C001) | |
| * 130 | 3-749-912-01 | RETAINER (S), RACK | |
| * 131 | 3-746-521-01 | RETAINER (R) | |

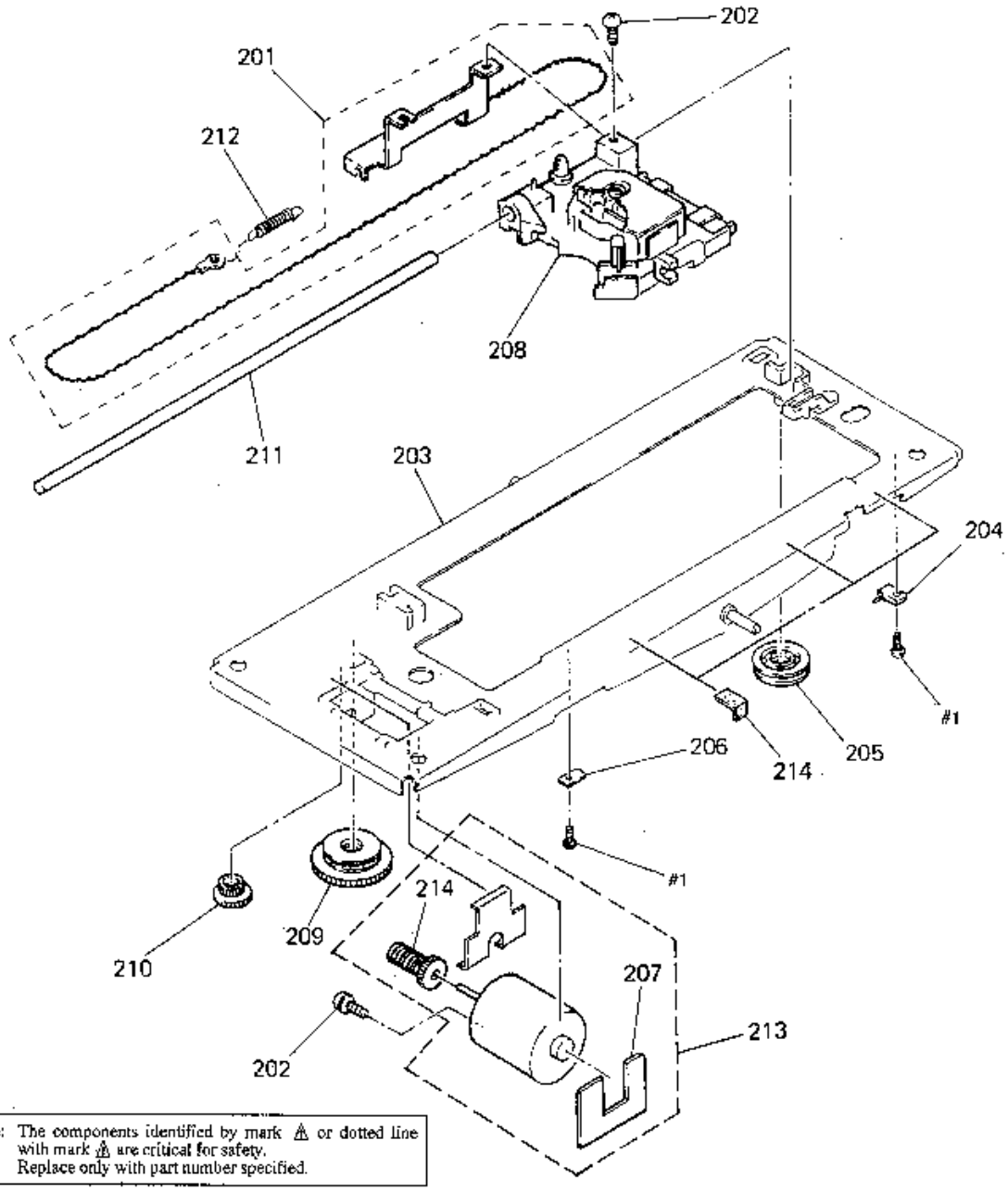
## 5-4. MD CHASSIS ASSEMBLY (1)




| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 151 | 3-735-021-01 | SPRING, TORSION | |
| * 153 | 1-631-095-11 | MT-30 BOARD | |
| 154 | 3-735-025-01 | GEAR, SKEW | |
| * 155 | 1-630-094-11 | CK-14 BOARD | |
| * 156 | A-6421-311-A | SY-33 BOARD, COMPLETE | |
| 157 | A-6415-298-A | MOTOR BLOCK ASSY, SKEW (M903) | |
| 158 | 1-554-468-00 | SWITCH, LEAF (SLED IN LIMIT LD/CD) (S903) | |
| 159 | 1-541-776-21 | MOTOR, LD SPINDLE (M901) | |
| * 160 | 1-630-096-11 | FG-13 BOARD | |
| 161 | 3-719-845-11 | SCREW (BX3), TAPPING | |

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 162 | X-3735-003-1 | TURNTABLE ASSY | |
| 163 | 3-701-506-01 | SET SCREW, DOUBLE POINT 3X4 | |
| * 164 | 3-735-026-01 | SPRING, COMPRESSION | |
| 165 | X-2625-077-1 | GUIDE ASSY, CENTER | |
| 166 | 4-606-833-01 | SCREW (3X5), + PSW | |
| 167 | 1-574-648-11 | CABLE, FLEXIBLE FLAT (24 CORE) | |
| 168 | 3-699-248-01 | SCREW (M3X6) | |
| * 169 | 3-737-413-01 | SHEET, TEFLON | |
| * 170 | 3-735-099-01 | SHEET, FLEXIBLE RETAINER | |
| * 171 | 3-735-068-15 | CHASSIS, MD | |

## 5-5. MD CHASSIS ASSEMBLY (2)




Note: The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

| Ref. No. | Part No. | Description | Remark |
|---|---|---|---|
| 201 | X-3735-001-1 | WIRE ASSY | |
| 202 | 3-699-248-01 | SCREW (M3X6) | |
| * 203 | X-3940-657-1 | CHASSIS ASSY | |
| 204 | 1-570-771-21 | SWITCH (SLED OUT LIMIT) (S902) | |
| 205 | 3-735 017-01 | PULLEY, RETURN | |
| 206 | 1-571-435-11 | SWITCH (SLED IN LIMIT) (S901) | |
| * 207 | 1-530-097-11 | MT-28 BOARD | |
| ⚠208 | A-848-138-11 | DEVICE, OPTICAL KHS-130A | |
| 209 | 3-735-016-01 | PULLEY, DRIVING | |
| 210 | 3-735-015-01 | GEAR, CARRIAGE | |
| * 211 | 3-735-020 01 | SHAFT, CARRIAGE | |
| 212 | 3-672-430-00 | SPRING, TENSION | |
| 213 | A-6415-434-A | MOTOR BLOCK ASSY, SLED (M902) | |
| 214 | 3 846-312-00 | SPACER | |

# SECTION 6
# ELECTRICAL PARTS LIST

AF-52

NOTE:
- Due to standardization, replacements in the parts list may be different from the parts specified in the diagrams or the components used on the set.
- -XX and -X mean standardized parts, so they may have some difference from the original one.
- RESISTORS
  All resistors are in ohms.
  METAL:Metal film resistor.
  METAL OXIDE: Metal oxide-film resistor.
  F:nonflammable
- Items marked "*" are not stocked since they are seldom required for routine service. Some delay should be anticipated when ordering these items.
- SEMICONDUCTORS
  In each case, u: μ, for example:
  uA..: μA.. uPA..: μPA..
  uPB..: μPB.. uPC..: μPC.. uPD..: μPD..
- CAPACITORS
  uF: μF
- COILS
  uH: μH

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

When indicating parts by reference number, please include the board.

| Ref.No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| * | A-6421-371-A | AF-52 BOARD, COMPLETE(MDP-440/640D) | | | | |
| | | ********** | | | | |
| * | A-6421-735-A | AF-52 BOARD, COMPLETE (MDP-740D) | | | | |
| | | ********** | | | | |
| | | < CAPACITOR > | | | | |
| C401 | 1-126-177-11 | ELECT | 100uF | 20% | 10V | (640D/740D) |
| C402 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V | (640D/740D) |
| C403 | 1-163-126-00 | CERAMIC CHIP | 240PF | 5% | 50V | (640D/740D) |
| C404 | 1-163-126-00 | CERAMIC CHIP | 240PF | 5% | 50V | (640D/740D) |
| C405 | 1-163-101-00 | CERAMIC CHIP | 22PF | 5% | 50V | (640D/740D) |
| C406 | 1-163-099-00 | CERAMIC CHIP | 18PF | 5% | 50V | (640D/740D) |
| C407 | 1-163-111-00 | CERAMIC CHIP | 56PF | 5% | 50V | (640D/740D) |
| C408 | 1-163-099-00 | CERAMIC CHIP | 18PF | 5% | 50V | (640D/740D) |
| C409 | 1-163-101-00 | CERAMIC CHIP | 22PF | 5% | 50V | (640D/740D) |
| C410 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V | (640D/740D) |
| C411 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V | (640D/740D) |
| C412 | 1-126-022-11 | ELECT | 47uF | 20% | 10V | (640D/740D) |
| C413 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V | (640D/740D) |
| C414 | 1-126-022-11 | ELECT | 47uF | 20% | 10V | (640D/740D) |
| C415 | 1-163-809-11 | CERAMIC CHIP | 0.047uF | 10% | 25V | (640D/740D) |
| C416 | 1-163-809-11 | CERAMIC CHIP | 0.047uF | 10% | 25V | (640D/740D) |
| C417 | 1-126-177-11 | ELECT | 100uF | 20% | 10V | |
| C418 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C419 | 1-163-121-00 | CERAMIC CHIP | 150PF | 5% | 50V | |
| C420 | 1-163-129-00 | CERAMIC CHIP | 330PF | 5% | 50V | |
| C421 | 1-163-121-00 | CERAMIC CHIP | 150PF | 5% | 50V | |
| C422 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C423 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C424 | 1-126-022-11 | ELECT | 47uF | 20% | 10V | |
| C425 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V | |
| C426 | 1-126-022-11 | ELECT | 47uF | 20% | 10V | |
| C427 | 1-163-809-11 | CERAMIC CHIP | 0.047uF | 10% | 25V | (640D/740D) |
| C428 | 1-163-809-11 | CERAMIC CHIP | 0.047uF | 10% | 25V | (640D/740D) |
| C429 | 1-164-161-11 | CERAMIC CHIP | 0.0022uF | 10% | 100V | |
| C715 | 1-163-809-11 | CERAMIC CHIP | 0.047uF | 10% | 25V | |
| C716 | 1-163-141-00 | CERAMIC CHIP | 0.001uF | 5% | 50V | |
| C717 | 1-124-994-11 | ELECT | 100uF | 20% | 6.3V | |
| C719 | 1-124-994-11 | ELECT | 100uF | 20% | 6.3V | |
| C721 | 1-163-111-00 | CERAMIC CHIP | 56PF | 5% | 50V | (640D/740D) |

| Ref.No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| C721 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | (MDP-440) |
| C722 | 1-163-145-00 | CERAMIC CHIP | 0.0015uF | 5% | 50V | |
| C723 | 1-163-009-11 | CERAMIC CHIP | 0.001uF | 10% | 50V | |
| C724 | 1-163-019-00 | CERAMIC CHIP | 0.0068uF | 10% | 50V | |
| C725 | 1-163-145-00 | CERAMIC CHIP | 0.0015uF | 5% | 50V | |
| C726 | 1-126-049-11 | ELECT | 22uF | 20% | 25V | |
| C727 | 1-124-994-11 | ELECT | 100uF | 20% | 6.3V | |
| C728 | 1-163-017-00 | CERAMIC CHIP | 0.0047uF | 5% | 50V | |
| C729 | 1-163-145-00 | CERAMIC CHIP | 0.0015uF | 5% | 50V | |
| C730 | 1-163-121-00 | CERAMIC CHIP | 150PF | 5% | 50V | |
| C731 | 1-163-125-00 | CERAMIC CHIP | 220PF | 5% | 50V | |
| C732 | 1-163-020-00 | CERAMIC CHIP | 0.0082uF | 10% | 50V | |
| C733 | 1-126-050-11 | ELECT | 10uF | 20% | 50V | |
| C734 | 1-163-809-11 | CERAMIC CHIP | 0.047uF | 10% | 25V | |
| C735 | 1-163-077-00 | CERAMIC CHIP | 0.1uF | 10% | 25V | |
| C736 | 1-126-049-11 | ELECT | 22uF | 20% | 25V | |
| C737 | 1-163-141-00 | CERAMIC CHIP | 0.001uF | 5% | 50V | |
| C738 | 1-163-809-11 | CERAMIC CHIP | 0.047uF | 10% | 25V | |
| C739 | 1-124-994-11 | ELECT | 100uF | 20% | 6.3V | |
| C742 | 1-124-994-11 | ELECT | 100uF | 20% | 6.3V | |
| C743 | 1-163-119-00 | CERAMIC CHIP | 120PF | 5% | 50V | |
| C744 | 1-163-125-00 | CERAMIC CHIP | 220PF | 5% | 50V | |
| C745 | 1-163-145-00 | CERAMIC CHIP | 0.0015uF | 5% | 50V | |
| C746 | 1-163-145-00 | CERAMIC CHIP | 0.0015uF | 5% | 50V | |
| C747 | 1-163-019-00 | CERAMIC CHIP | 0.0068uF | 10% | 50V | |
| C748 | 1-126-049-11 | ELECT | 22uF | 20% | 25V | |
| C749 | 1-163-017-00 | CERAMIC CHIP | 0.0047uF | 5% | 50V | |
| C750 | 1-163-121-00 | CERAMIC CHIP | 150PF | 5% | 50V | |
| C751 | 1-163-145-00 | CERAMIC CHIP | 0.0015uF | 5% | 50V | |
| C752 | 1-163-125-00 | CERAMIC CHIP | 220PF | 5% | 50V | |
| C753 | 1-163-020-00 | CERAMIC CHIP | 0.0082uF | 10% | 50V | |
| C754 | 1-126-050-11 | ELECT | 10uF | 20% | 50V | |
| C755 | 1-163-809-11 | CERAMIC CHIP | 0.047uF | 10% | 25V | |
| C756 | 1-126-529-11 | ELECT | 0.47uF | 20% | 50V | |
| C757 | 1-124-994-11 | ELECT | 100uF | 20% | 6.3V | |
| C758 | 1-126-163-11 | ELECT | 4.7uF | 20% | 50V | |
| C759 | 1-163-113-00 | CERAMIC CHIP | 68PF | 5% | 50V | (640D/740D) |
| C759 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | (MDP-440) |
| C760 | 1-163-141-00 | CERAMIC CHIP | 0.001uF | 5% | 50V | |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C761 | 1-163-117-00 | CERAMIC CHIP | 100PF | 5% | 50V |
| C762 | 1-126-022-11 | ELECT | 47uF | 20% | 10V |
| C763 | 1-126-022-11 | ELECT | 47uF | 20% | 10V |
| C764 | 1-163-119-00 | CERAMIC CHIP | 120PF | 5% | 50V |
| C765 | 1-163-115-00 | CERAMIC CHIP | 82PF | 5% | 50V |
| C766 | 1-126-022-11 | ELECT | 47uF | 20% | 10V (640D/740D) |
| | | < CONNECTOR > | | | |
| * CN701 | 1-566-709-11 | CONNECTOR, BOARD TO BOARD 12P | | | |
| | | < FILTER > | | | |
| FL401 | 1-235-925-11 | FILTER, BAND PASS (2.3MHZ) | | | (640D/740D) |
| FL402 | 1-235-926-11 | FILTER, BAND PASS (2.8MHZ) | | | (640D/740D) |
| FL403 | 1-236-573-11 | BPF (PAL LCH) (0.68MHz) | | | |
| FL404 | 1-236-574-11 | BPF (PAL LCH) (1.07MHz) | | | |
| | | < IC > | | | |
| IC401 | 8-759-941-68 | IC BA7131F (MDP-640D/740D) | | | |
| IC402 | 8-759-941-68 | IC BA7131F (MDP-640D/740D) | | | |
| IC701 | 8-759-322-23 | IC HA12127ANT | | | |
| | | < JUMPER RESISTOR > | | | |
| JR001 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR002 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR003 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR004 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR005 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR006 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR007 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR008 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR009 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR010 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR011 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR012 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR013 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR014 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR015 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR016 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR017 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W (640D/740D) |
| JR018 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W (640D/740D) |
| JR019 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W (640D/740D) |
| JR020 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W (640D/740D) |
| JR021 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W (640D/740D) |
| JR022 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR023 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR024 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR025 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W (640D/740D) |
| JR026 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR027 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JR028 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W (640D/740D) |
| JR029 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W (640D/740D) |
| | | < COIL > | | | |
| L401 | 1-410-521-11 | INDUCTOR 100uH | | | (MDP-640D/740D) |
| L402 | 1-410-336-11 | INDUCTOR 220uH | | | (MDP-640D/740D) |
| L403 | 1-408-417-00 | INDUCTOR 47uH | | | (MDP-640D/740D) |
| L404 | 1-408-417-00 | INDUCTOR 47uH | | | (MDP-640D/740D) |
| L405 | 1-410-520-11 | INDUCTOR 82uH | | | |
| L406 | 1-410-520-11 | INDUCTOR 82uH | | | |
| L705 | 1-408-420-00 | INDUCTOR 82uH | | | |
| L706 | 1-408-420-00 | INDUCTOR 82uH | | | |
| L707 | 1-410-069-11 | INDUCTOR 6.8mH | | | |
| L708 | 1-410-069-11 | INDUCTOR 6.8mH | | | |
| | | < TRANSISTOR > | | | |
| Q401 | 8-729-100-66 | TRANSISTOR | 2SC1623 | | (MDP-640D/740D) |
| Q402 | 8-729-100-66 | TRANSISTOR | 2SC1623 | | (MDP-640D/740D) |
| Q403 | 8-729-100-66 | TRANSISTOR | 2SC1623 | | (MDP-640D/740D) |
| Q404 | 8-729-100-66 | TRANSISTOR | 2SC1623 | | (MDP-640D/740D) |
| Q405 | 8-729-100-66 | TRANSISTOR | 2SC1623 | | (MDP-640D/740D) |
| Q406 | 8-729-100-66 | TRANSISTOR | 2SC1623 | | (MDP-640D/740D) |
| Q407 | 8-729-100-66 | TRANSISTOR | 2SC1623 | | |
| Q408 | 8-729-100-66 | TRANSISTOR | 2SC1623 | | |
| Q409 | 8-729-100-66 | TRANSISTOR | 2SC1623 | | |
| Q410 | 8-729-100-66 | TRANSISTOR | 2SC1623 | | |
| Q411 | 8-729-100-66 | TRANSISTOR | 2SC1623 | | |
| Q412 | 8-729-100-66 | TRANSISTOR | 2SC1623 | | |
| Q701 | 8-729-220-93 | TRANSISTOR | 2SK209-G | | (MDP-640D/740D) |
| Q702 | 8-729-220-93 | TRANSISTOR | 2SK209-G | | (MDP-640D/740D) |
| Q703 | 8-729-901-01 | TRANSISTOR | DTC144EK | | (MDP-640D/740D) |
| Q704 | 8-729-901-06 | TRANSISTOR | DTA144EK | | (MDP-640D/740D) |
| Q705 | 8-729-220-93 | TRANSISTOR | 2SK209-G | | (MDP-640D/740D) |
| Q706 | 8-729-220-93 | TRANSISTOR | 2SK209-G | | (MDP-640D/740D) |
| | | < RESISTOR > | | | |
| R401 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W (640D/740D) |
| R402 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W (640D/740D) |
| R403 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W (640D/740D) |
| R404 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W (640D/740D) |
| R405 | 1-216-048-00 | METAL CHIP | 910 | 5% | 1/10W (640D/740D) |
| R406 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W (640D/740D) |
| R407 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W (640D/740D) |
| R408 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W (640D/740D) |
| R409 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W (640D/740D) |
| R410 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W (640D/740D) |

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R411 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | (640D/740D) |
| R412 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W | (640D/740D) |
| R413 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W | (640D/740D) |
| R414 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W | (640D/740D) |
| R415 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | (640D/740D) |
| R416 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | (640B/740D) |
| R417 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | (640B/740D) |
| R418 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W | (640B/740D) |
| R419 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W | (640B/740D) |
| R420 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W | (640B/740D) |
| R421 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R422 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |
| R423 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |
| R424 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R425 | 1-216-045-00 | METAL CHIP | 680 | 5% | 1/10W | |
| R426 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R427 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R428 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R429 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R430 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R431 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R432 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W | |
| R433 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W | |
| R434 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W | |
| R435 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R436 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R437 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R438 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W | |
| R439 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W | |
| R440 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W | |
| R719 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R721 | 1-216-063-00 | METAL CHIP | 3.9K | 5% | 1/10W | |
| R724 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R725 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W | |
| R726 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |
| R727 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R728 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R730 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W | |
| R731 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | (640D/740D) |
| R731 | 1-216-081-00 | METAL GLAZE | 22K | 5% | 1/10W | (MDP-440) |
| R732 | 1-216-748-11 | METAL CHIP | 39K | 1% | 1/10W | (640D/740D) |
| R732 | 1-216-081-00 | METAL GLAZE | 22K | 5% | 1/10W | (MDP-440) |
| R733 | 1-216-069-00 | METAL CHIP | 6.8K | 5% | 1/10W | |
| R734 | 1-216-101-00 | METAL CHIP | 150K | 5% | 1/10W | |
| R735 | 1-216-101-00 | METAL CHIP | 150K | 5% | 1/10W | |
| R736 | 1-216-096-00 | METAL GLAZE | 91K | 5% | 1/10W | |
| R737 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R738 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R739 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R740 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R745 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R746 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R747 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W | |
| R748 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |
| R749 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R750 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R751 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | (640D/740B) |
| R751 | 1-216-081-00 | METAL GLAZE | 22K | 5% | 1/10W | (MDP-440) |
| R752 | 1-216-748-11 | METAL CHIP | 39K | 1% | 1/10W | (640D/740B) |
| R752 | 1-216-081-00 | METAL GLAZE | 22K | 5% | 1/10W | (MDP 440) |
| R753 | 1-216-069-00 | METAL CHIP | 6.8K | 5% | 1/10W | |
| R754 | 1-216-063-00 | METAL CHIP | 3.9K | 5% | 1/10W | |
| R757 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R758 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R759 | 1-216-121-00 | METAL CHIP | 1M | 5% | 1/10W | (640D/740D) |
| R760 | 1-216-121-00 | METAL CHIP | 1M | 5% | 1/10W | (640D/740D) |
| R761 | 1-216-121-00 | METAL CHIP | 1M | 5% | 1/10W | (640D/740D) |
| R762 | 1-216-121-00 | METAL CHIP | 1M | 5% | 1/10W | (640D/740D) |
| R763 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | (640B/740D) |
| R764 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | (640D/740D) |
| R765 | 1-216-121-00 | METAL CHIP | 1M | 5% | 1/10W | (640D/740D) |
| R766 | 1-216-121-00 | METAL CHIP | 1M | 5% | 1/10W | (640D/740D) |
| R767 | 1-216-121-00 | METAL CHIP | 1M | 5% | 1/10W | (640D/740B) |
| R768 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W | (640D/740B) |
| R770 | 1-216-069-00 | METAL CHIP | 6.8K | 5% | 1/10W | (640D/740D) |
| R771 | 1-216-069-00 | METAL CHIP | 6.8K | 5% | 1/10W | (640D/740D) |
| R772 | 1-216-121-00 | METAL CHIP | 1M | 5% | 1/10W | (640D/740D) |
| R773 | 1-216-121-00 | METAL CHIP | 1M | 5% | 1/10W | (640D/740D) |

< VARIABLE RESISTOR >

| | | | |
|---|---|---|---|
| RV701 | 1-228-995-00 | RES, ADJ, METAL 22K | |
| RV702 | 1-228-995-00 | RES, ADJ, METAL 22K | |
| RV703 | 1-228-996-00 | RES, ADJ, METAL 47K | (MDP-640D/740D) |
| RV704 | 1-228-996-00 | RES, ADJ, METAL 47K | (MDP-640D/740B) |

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* 1-530-094-11 CK-14 BOARD

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< CAPACITOR >

| | | | | |
|---|---|---|---|---|
| C001 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | 25V |
| C002 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | 25V |

< CONNECTOR >

| | | | |
|---|---|---|---|
| CND01 | 1-506-467-11 | CONNECTOR 2P, MALE | |
| CND02 | 1-506-468-11 | CONNECTOR 3P, MALE | |
| CND03 | 1-506-467-11 | CONNECTOR 2P, MALE | |
| CND04 | 1-506-467-11 | CONNECTOR 2P, MALE | |

**CK-14** **FG-13** **FP-489**

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| CND05 | 1-506-467-11 | CONNECTOR 2P, MALE | | | |
| | | < JUMPER RESISTOR > | | | |
| JRD01 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| JRD02 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| | | < RESISTOR > | | | |
| RD01 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W |
| RD02 | 1-216-031-00 | METAL CHIP | 180 | 5% | 1/10W |
| RD03 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W |
| RD04 | 1-216-001-00 | METAL CHIP | 10 | 5% | 1/10W |
| RD05 | 1-216-001-00 | METAL CHIP | 10 | 5% | 1/10W |
| RD06 | 1-216-031-00 | METAL CHIP | 180 | 5% | 1/10W |
| RD07 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W |
| ********** | | | | | |
| * | 1-630-096-11 | FG-13 BOARD | | | |
| | | ********** | | | |
| | | < DIODE > | | | |
| D001 | 8-719-939-11 | DIODE GP-2S09-B | | | |
| ********** | | | | | |
| * | A-6421-725-A | FP-489 BOARD, COMPLETE (MDP-440) | | | |
| | | ********** | | | |
| * | A-6421-728-A | FP-489 BOARD, COMPLETE (640D/740D) | | | |
| | | ********** | | | |
| | 2-355-254-01 | SPACER (A), LCD | | | |
| * | 3-746-508-01 | HOLDER, FLD | | | |
| | | < CAPACITOR > | | | |
| C001 | 1-163-023-00 | CERAMIC CHIP | 0.015uF | 5% | 50V |
| C004 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C005 | 1-126-157-11 | ELECT | 10uF | 20% | 16V |
| C006 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C007 | 1-126-157-11 | ELECT | 10uF | 20% | 16V |
| C008 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C009 | 1-126-157-11 | ELECT | 10uF | 20% | 16V |
| C010 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C011 | 1-135-210-11 | TANTALUM CHIP | 4.7uF | 20% | 10V |
| C011 | 1-163-075-00 | CERAMIC CHIP | 0.047uF | | 50V |
| | | < CONNECTOR > | | | |
| CND01 | 1-506-469-11 | CONNECTOR 4P, MALE | | | |
| CND02 | 1-506-470-11 | CONNECTOR 5P, MALE | | | |
| CN003 | 1-506-473-11 | CONNECTOR 8P, MALE | | | |
| CN004 | 1-506-472-11 | CONNECTOR 7P, MALE | | | |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| | | < IC > | | | |
| IC001 | 8-752-816-39 | IC CXP50116-072Q | | | |
| IC002 | 8-759-605-21 | IC M51953AFP | | | |
| IC003 | 8-741-109-47 | IC SBX1610-09 (MDP-640D/740D) | | | |
| IC003 | 8-741-138-78 | IC BX-1453 (MDP-440) | | | |
| | | < COIL > | | | |
| L001 | 1-407-109-XX | INDUCTOR 100uH | | | |
| L002 | 1-407-109-XX | INDUCTOR 100uH | | | |
| | | < INDICATOR TUBE > | | | |
| ND001 | 1-518-511-11 | INDICATOR TUBE, FLUORESCENT | | | |
| | | < TRANSISTOR > | | | |
| Q001 | 8-729-100-67 | TRANSISTOR 2SC1623-L7 | | | |
| Q002 | 8-729-100-67 | TRANSISTOR 2SC1623-L7 | | | |
| | | < RESISTOR > | | | |
| R001 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W |
| R002 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R003 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W |
| R004 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| RD05 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| RD06 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R007 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| RD08 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| RD09 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R010 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W |
| R011 | 1-216-079-00 | METAL CHIP | 18K | 5% | 1/10W |
| R012 | 1-216-069-00 | METAL CHIP | 6.8K | 5% | 1/10W |
| R013 | 1-216-063-00 | METAL CHIP | 3.9K | 5% | 1/10W |
| R014 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W |
| R015 | 1-216-079-00 | METAL CHIP | 18K | 5% | 1/10W |
| R016 | 1-216-069-00 | METAL CHIP | 6.8K | 5% | 1/10W |
| R017 | 1-216-063-00 | METAL CHIP | 3.9K | 5% | 1/10W |
| R018 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W |
| R019 | 1-216-079-00 | METAL CHIP | 18K | 5% | 1/10W |
| R020 | 1-216-069-00 | METAL CHIP | 6.8K | 5% | 1/10W |
| R021 | 1-216-063-00 | METAL CHIP | 3.9K | 5% | 1/10W |
| R022 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W |
| R023 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R024 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R025 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R026 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| RD27 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R028 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R029 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R030 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |

| Ref.No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| R031 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R032 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R033 | 1-216-121-00 | METAL CHIP | 1M | 5% | 1/10W |
| R034 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R051 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| | | < SWITCH > | | | |
| S001 | 1-571-977-11 | SWITCH, TACTIL ( 1 ) | | | |
| S002 | 1-571-977-11 | SWITCH, TACTIL ( 2 ) | | | |
| S003 | 1-571-977-11 | SWITCH, TACTIL ( 3 ) | | | |
| S004 | 1-571-977-11 | SWITCH, TACTIL ( 4 ) | | | |
| S005 | 1-571-977-11 | SWITCH, TACTIL ( 5 ) | | | |
| S006 | 1-571-977-11 | SWITCH, TACTIL ( 6 ) | | | |
| S007 | 1-571-977-11 | SWITCH, TACTIL ( 7 ) | | | |
| S008 | 1-571-977-11 | SWITCH, TACTIL ( 8 ) | | | |
| S009 | 1-571-977-11 | SWITCH, TACTIL ( 9 ) | | | |
| S010 | 1-571-977-11 | SWITCH, TACTIL ( 0 ) | | | |
| S011 | 1-571-977-11 | SWITCH, TACTIL (+10) | | | |
| S012 | 1-571-977-11 | SWITCH, TACTIL (AUTO PGM) | | | |
| S013 | 1-571-977-11 | SWITCH, TACTIL (AV TIME) | | | |
| S014 | 1-571-977-11 | SWITCH, TACTIL (FILE) | | | |
| S015 | 1-571-977-11 | SWITCH, TACTIL (CUSTOM INDEX) | | | |
| S016 | 1-571-758-11 | SWITCH, PUSH (1 KEY) (MDP-640D/740D) | | | |
| | | < VIBRATOR > | | | |
| X001 | 1-577-359-21 | VIBRATOR, CERAMIC (4.19MHz) | | | |

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|---|---|---|---|---|---|---|
| * | A-8421-726-A | FP-49D BOARD, COMPLETE | | | | |
| | | ********** | | | | |
| | | < CONNECTOR > | | | | |
| * | CN301 | 1-569-750-11 PIN, CONNECTOR (PC BOARD) 8P | | | | |
| | | < DIODE > | | | | |
| | D301 | 8-719-911-19 DIODE 1SS119 | | | | |
| | D302 | 8-719-911-19 DIODE 1SS119 | | | | |
| | | < JUMPER RESISTOR > | | | | |
| | JR301 | 1-216-295-00 METAL CHIP | 0 | 5% | 1/10W | |
| | JR302 | 1-216-295-00 METAL CHIP | 0 | 5% | 1/10W | |
| | JR303 | 1-216-295-00 METAL CHIP | 0 | 5% | 1/10W | |
| | | < RESISTOR > | | | | |
| | R301 | 1-216-059-00 METAL CHIP | 2.7K | 5% | 1/10W | |
| | R302 | 1-216-063-00 METAL CHIP | 3.9K | 5% | 1/10W | |
| | R303 | 1-216-069-00 METAL CHIP | 6.8K | 5% | 1/10W | |
| | R304 | 1-216-059-00 METAL CHIP | 2.7K | 5% | 1/10W | |

| Ref.No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| R305 | 1-216-063-00 | METAL CHIP | 3.9K | 5% | 1/10W |
| R306 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W |
| | | < SWITCH > | | | |
| S301 | 1-571-977-11 | SWITCH, TACTIL (OPEN/CLOSE) | | | |
| S302 | 1-571-977-11 | SWITCH, TACTIL ( ■ ) | | | |
| S303 | 1-571-977-11 | SWITCH, TACTIL ( ⏮ ) | | | |
| S304 | 1-571-977-11 | SWITCH, TACTIL ( ⏭ ) | | | |
| S306 | 1-571-758-11 | SWITCH, PUSH (1 KEY) (SIDE REPEAT) | | | |
| S307 | 1-572-662-41 | SWITCH, ROTARY ( ▶/⏸/CLEAR SCAN) | | | |

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|---|---|---|---|---|---|---|
| * | 1-636-182-11 | HP-75 BOARD | | | | |
| | | ********** | | | | |
| | | < CAPACITOR > | | | | |
| | C101 | 1-124-478-11 ELECT | 100μF | 20% | 25V | |
| | C102 | 1-124-478-11 ELECT | 100μF | 20% | 25V | |
| | | < CONNECTOR > | | | | |
| | CN101 | 1-506-471-11 CONNECTOR 6P, MALE | | | | |
| | | < JACK > | | | | |
| | CNJ101 | 1-507-706-71 JACK (PHONES) | | | | |
| | | < IC > | | | | |
| | IC101 | 8-759-701-45 IC NJM456DS-D | | | | |
| | | < RESISTOR > | | | | |
| | R101 | 1-249-417-11 CARBON | 1K | 5% | 1/4W | |
| | R102 | 1-249-425-11 CARBON | 4.7K | 5% | 1/4W | |
| | R103 | 1-249-430-11 CARBON | 12K | 5% | 1/4W | |
| | R104 | 1-249-405-11 CARBON | 100 | 5% | 1/4W | |
| | R105 | 1-249-417-11 CARBON | 1K | 5% | 1/4W | |
| | R106 | 1-249-425-11 CARBON | 4.7K | 5% | 1/4W | |
| | R107 | 1-249-430-11 CARBON | 12K | 5% | 1/4W | |
| | R108 | 1-249-405-11 CARBON | 100 | 5% | 1/4W | |
| | R109 | 1-249-409-11 CARBON | 220 | 5% | 1/4W | |
| | R110 | 1-249-409-11 CARBON | 220 | 5% | 1/4W | |
| | | < VARIABLE RESISTOR > | | | | |
| | RV101 | 1-238-612-11 RES, VAR (LEVEL) | | | | |

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| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| * | 1-636-185-11 | LS-32 BOARD | |
| | 3-735-054-01 | HOLDER, SENSOR | |
| | | < DIODE > | |
| D201 | 8-719-941-81 | DIODE GL36D | |
| | | < TRANSISTOR > | |
| Q201 | 8-729-904-10 | TRANSISTOR PT 36DFS | |
| * | A-6421-498-A | MP-31 BOARD, COMPLETE (MDP-44D) | |
| * | A 6421-727-A | MP-31 BOARD, COMPLETE (MDP-640D) | |
| * | A-6421-729-A | MP 31 BOARD, COMPLETE (MDP-740D) | |
| * | 3-309-144-21 | HEAT SINK | |
| | 3-831-441-XX | CUSHION (5) | |
| | 7 685 646 79 | SCREW +BVTP 3X8 TYPE2 IT-3 | |
| | | < CAPACITOR > | |
| C101 | 1-124-360-00 | ELECT 1000uF 20% 16V | |
| C102 | 1-124 472 11 | ELECT 47uF 20% 10V (640D/740D) | |
| C102 | 1-126-176-11 | ELECT 220uF 20% 10V (MDP 44D) | |
| C103 | 1-163-115-00 | CERAMIC CHIP 82PF 5% 50V | |
| C104 | 1-126-301-11 | ELECT 1uF 20% 50V | |
| C105 | 1-163-117-00 | CERAMIC CHIP 100PF 5% 50V | |
| C106 | 1-163-097-00 | CERAMIC CHIP 15PF 5% 50V | |
| C107 | 1-124-589-11 | ELECT 47uF 20% 16V | |
| C108 | 1 164 232 11 | CERAMIC CHIP 0.01uF 50V | |
| C109 | 1-126-154 11 | ELECT 47uF 20% 6.3V | |
| C110 | 1-163-103-00 | CERAMIC CHIP 27PF 5% 50V | |
| C111 | 1-163-095-00 | CERAMIC CHIP 12PF 5% 50V | |
| C112 | 1-163 105 00 | CERAMIC CHIP 33PF 5% 50V | |
| C113 | 1-163-115-00 | CERAMIC CHIP 82PF 5% 50V | |
| C114 | 1-163-101-00 | CERAMIC CHIP 22PF 5% 50V | |
| C115 | 1-163-113-00 | CERAMIC CHIP 68PF 5% 50V | |
| C116 | 1-163-103-00 | CERAMIC CHIP 27PF 5% 50V | |
| C117 | 1-163-113-00 | CERAMIC CHIP 68PF 5% 50V | |
| C118 | 1-163-097-00 | CERAMIC CHIP 15PF 5% 50V | |
| C119 | 1-163-103-00 | CERAMIC CHIP 27PF 5% 50V | |
| C120 | 1-126-157-11 | ELECT 10uF 20% 16V | |
| C121 | 1 126 157 11 | ELECT 10uF 20% 16V | |
| C122 | 1-126-157-11 | ELECT 10uF 20% 16V | |
| C123 | 1-130-495-00 | MYLAR 0.1uF 5% 50V | |
| C124 | 1-163-038-00 | CERAMIC CHIP 0.1uF 25V | |

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| C125 | 1-163-019-00 | CERAMIC CHIP 0.0068uF 10% 50V | |
| C126 | 1 124 589 11 | ELECT 47uF 20% 16V | |
| C127 | 1 163 035 00 | CERAMIC CHIP 0.047uF 50V | |
| C128 | 1-124-126-00 | ELECT 47uF 20% 10V | |
| C129 | 1-163-035-00 | CERAMIC CHIP 0.047uF 50V | |
| C130 | 1-163-095-00 | CERAMIC CHIP 12PF 5% 50V | |
| C131 | 1-163-107-00 | CERAMIC CHIP 39PF 5% 50V | |
| C132 | 1 163 095 00 | CERAMIC CHIP 12PF 5% 50V | |
| C133 | 1-126-301-11 | ELECT 1uF 20% 50V | |
| C134 | 1-126-301-11 | ELECT 1uF 20% 50V | |
| C135 | 1 124 442 00 | ELECT 330uF 20% 6.3V | |
| C136 | 1-163-038-00 | CERAMIC CHIP 0.1uF 25V | |
| C137 | 1-163-129-00 | CERAMIC CHIP 330PF 5% 50V | |
| C138 | 1-163-113-00 | CERAMIC CHIP 68PF 5% 50V | |
| C139 | 1-163-035-00 | CERAMIC CHIP 0.047uF 50V | |
| C140 | 1-163-125-00 | CERAMIC CHIP 220PF 5% 50V | |
| C141 | 1-163-113-00 | CERAMIC CHIP 82PF 5% 50V | |
| C142 | 1-126-301-11 | ELECT 1uF 20% 50V | |
| C143 | 1-126-157-11 | ELECT 10uF 20% 16V (640D/740D) | |
| C144 | 1 163 123 00 | CERAMIC CHIP 180PF 5% 50V (640D/740D) | |
| C145 | 1-126-157-11 | ELECT 10uF 20% 16V (640D/740D) | |
| C146 | 1-163-123-00 | CERAMIC CHIP 180PF 5% 50V | |
| C147 | 1-124-443-00 | ELECT 100uF 20% 10V | |
| C148 | 1-163-131-00 | CERAMIC CHIP 390PF 5% 50V | |
| C149 | 1-163-103-00 | CERAMIC CHIP 27PF 5% 50V (840D/740D) | |
| C150 | 1 163 105 00 | CERAMIC CHIP 33PF 5% 50V (640D/740D) | |
| C150 | 1-163-107-00 | CERAMIC CHIP 39PF 5% 50V (MDP-44D) | |
| C151 | 1-163-031-11 | CERAMIC CHIP 0.01uF 50V | |
| C152 | 1-163-035-00 | CERAMIC CHIP 0.047uF 50V | |
| C153 | 1-124-257 00 | ELECT 2.2uF 20% 50V | |
| C154 | 1-124-126-00 | ELECT 47uF 20% 10V | |
| C156 | 1-124-443-00 | ELECT 100uF 20% 10V | |
| C157 | 1-124-257 00 | ELECT 2.2uF 20% 50V | |
| C158 | 1 124 471 00 | ELECT 1000uF 20% 6.3V | |
| C159 | 1-163-035-00 | CERAMIC CHIP 0.047uF 50V | |
| C160 | 1-130-483 00 | MYLAR 0.01uF 5% 50V | |
| C161 | 1-131-347-00 | TANTALUM 1uF 10% 35V | |
| C162 | 1-130-487-00 | MYLAR 0.022uF 5% 50V | |
| C163 | 1-163-107-00 | CERAMIC CHIP 39PF 5% 50V | |
| C164 | 1-163-099-00 | CERAMIC CHIP 18PF 5% 50V | |
| C165 | 1-163 101 00 | CERAMIC CHIP 22PF 5% 50V | |
| C166 | 1-124-442-00 | ELECT 330uF 20% 6.3V | |
| C167 | 1-163-035-00 | CERAMIC CHIP 0.047uF 50V | |
| C168 | 1-126-301-11 | ELECT 1uF 20% 50V | |
| C169 | 1-163-035-00 | CERAMIC CHIP 0.047uF 50V | |
| C170 | 1-163-035-00 | CERAMIC CHIP 0.047uF 50V | |
| C171 | 1-124-442-00 | ELECT 330uF 20% 6.3V | |
| C174 | 1-163-031-11 | CERAMIC CHIP 0.01uF 50V | |
| C175 | 1-163-101-00 | CERAMIC CHIP 22PF 5% 50V | |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C176 | 1 163 031 11 | CERAMIC CHIP | 0.01uF | | 50V |
| C177 | 1-163-109-00 | CERAMIC CHIP | 47PF | 5% | 50V |
| C178 | 1-163-109-00 | CERAMIC CHIP | 47PF | 5% | 50V |
| C179 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C180 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C181 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C182 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C183 | 1-124-126-00 | ELECT | 47uF | 20% | 10V |
| C184 | 1 163 031 11 | CERAMIC CHIP | 0.01uF | | 50V |
| C185 | 1-163-121-00 | CERAMIC CHIP | 150PF | 5% | 50V |
| C186 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C187 | 1-163-068-00 | CERAMIC CHIP | 5PF | 50V | (640D/740D) |
| C188 | 1 163 095-00 | CERAMIC CHIP | 12PF 5% | 50V | (640D/740D) |
| C189 | 1 163 099-00 | CERAMIC CHIP | 18PF 5% | 50V | (MDP-440) |
| C189 | 1-163 035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C190 | 1-126-154 11 | ELECT | 47uF | 20% | 6.3V |
| C191 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | 25V | (640D/740D) |
| C192 | 1 163-038-00 | CERAMIC CHIP | 0.1uF | 25V | (640D/740D) |
| C193 | 1-163-031 11 | CERAMIC CHIP | 0.01uF | | 50V |
| C195 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C196 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C200 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C201 | 1-130-480-00 | MYLAR | 0.0056uF | 5% | 50V |
| C202 | 1-130-474-00 | MYLAR | 0.0018uF | 5% | 50V |
| C203 | 1-163 031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C204 | 1 130 483 00 | MYLAR | 0.01uF | 5% | 50V |
| C205 | 1-130-489-00 | MYLAR | 0.033uF | 5% | 50V |
| C206 | 1-163-117-00 | CERAMIC CHIP | 100PF | 5% | 50V |
| C207 | 1-163-105-00 | CERAMIC CHIP | 33PF | 5% | 50V |
| C208 | 1-164-232-11 | CERAMIC CHIP | 0.1uF | | 50V |
| C209 | 1-164-182-11 | CERAMIC CHIP | 0.0033uF | 10% | 50V |
| C210 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C211 | 1-124-589-11 | ELECT | 47uF | 20% | 16V |
| C212 | 1-163-017-00 | CERAMIC CHIP | 0.0047uF | 10% | 50V (MDP-440) |
| C212 | 1-163-022-00 | CERAMIC CHIP | 0.012uF | 10% | 50V(640D/740D) |
| C213 | 1 163 139 00 | CERAMIC CHIP | 820PF | 5% | 50V |
| C214 | 1-126-154-11 | ELECT | 47uF | 20% | 6.3V |
| C215 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C216 | 1 163 119-00 | CERAMIC CHIP | 120PF | 5% | 50V |
| C217 | 1-163-119-00 | CERAMIC CHIP | 120PF | 5% | 50V |
| C218 | 1-126-301-11 | ELECT | 1uF | 20% | 50V |
| C219 | 1 163-101-00 | CERAMIC CHIP | 22PF | 5% | 50V |
| C220 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C222 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C223 | 1-163-119-00 | CERAMIC CHIP | 120PF | 5% | 50V |
| C224 | 1-126 154 11 | ELECT | 47uF | 20% | 6.3V |
| C225 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C226 | 1-126 154 11 | ELECT | 47uF | 20% | 6.3V |
| C228 | 1-130-495-00 | MYLAR | 0.1uF | 5% | 50V |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C230 | 1-130-491-00 | MYLAR | 0.047uF | 5% | 50V |
| C231 | 1-124-257-00 | ELECT | 2.2uF | 20% | 50V |
| C232 | 1-126-301 11 | ELECT | 1uF | 20% | 50V |
| C233 | 1 163-031 11 | CERAMIC CHIP | 0.01uF | | 50V |
| C234 | 1-163-117-00 | CERAMIC CHIP | 100PF | 5% | 50V |
| C235 | 1-130-489-00 | MYLAR | 0.033uF | 5% | 50V |
| C236 | 1-130-486-00 | MYLAR | 0.018uF | 10% | 50V |
| C237 | 1-163-117-00 | CERAMIC CHIP | 100PF | 5% | 50V |
| C238 | 1-163-117-00 | CERAMIC CHIP | 100PF | 5% | 50V |
| C239 | 1 130 483 00 | MYLAR | 0.01uF | 5% | 50V |
| C240 | 1-124-443-00 | ELECT | 100uF | 20% | 10V |
| C241 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C242 | 1-164-182-11 | CERAMIC CHIP | 0.0033uF | 10% | 50V |
| C243 | 1-130-483-00 | MYLAR | 0.01uF | 5% | 50V |
| C244 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C245 | 1 163 035 00 | CERAMIC CHIP | 0.047uF | | 50V |
| C246 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C247 | 1-126-154-11 | ELECT | 47uF | 20% | 6.3V |
| C248 | 1-126-301-11 | ELECT | 1uF | 20% | 50V |
| C249 | 1-130-491-00 | MYLAR | 0.047uF | 5% | 50V |
| C250 | 1-124-257-00 | ELECT | 2.2uF | 20% | 50V |
| C251 | 1 126 154-11 | ELECT | 47uF | 20% | 6.3V |
| C252 | 1-124-443-00 | ELECT | 100uF | 20% | 10V |
| C253 | 1-163-125-00 | CERAMIC CHIP | 220PF | 5% | 50V |
| C254 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C255 | 1-126-154-11 | ELECT | 47uF | 20% | 6.3V |
| C256 | 1-163-117-00 | CERAMIC CHIP | 100PF | 5% | 50V (640D/740D) |
| C257 | 1-124-443-00 | ELECT | 100uF | 20% | 10V |
| C258 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C261 | 1-163 031 11 | CERAMIC CHIP | 0.01uF | | 50V |
| C262 | 1-124-126-00 | ELECT | 47uF | 20% | 10V |
| C270 | 1-124-126-00 | ELECT | 47uF | 20% | 10V |
| C271 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C272 | 1-163-105-00 | CERAMIC CHIP | 33PF | 5% | 50V |
| C273 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C274 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C275 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V |
| C276 | 1-124-589-11 | ELECT | 47uF | 20% | 16V |
| C277 | 1-163-093-00 | CERAMIC CHIP | 10PF | 5% | 50V |
| C279 | 1-124-442-00 | ELECT | 330uF | 20% | 6.3V |
| C280 | 1-124-442-00 | ELECT | 330uF | 20% | 6.3V |
| C281 | 1-163-103-00 | CERAMIC CHIP | 27PF | 5% | 50V |
| C282 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C283 | 1-163-103-00 | CERAMIC CHIP | 27PF | 5% | 50V |
| C284 | 1-163-103-00 | CERAMIC CHIP | 27PF | 5% | 50V |
| C285 | 1-163-103-00 | CERAMIC CHIP | 27PF | 5% | 50V |
| C286 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C287 | 1-126-157-11 | ELECT | 10uF | 20% | 16V |

## MP-31

| Ref.No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C288 | 1-163-101-00 | CERAMIC CHIP | 22PF | 5% | 50V |
| C289 | 1-163-113-00 | CERAMIC CHIP | 68PF | 5% | 50V |
| C290 | 1-163-113-00 | CERAMIC CHIP | 68PF | 5% | 50V |
| C291 | 1-163-101-00 | CERAMIC CHIP | 22PF | 5% | 50V |
| C292 | 1-163-113-00 | CERAMIC CHIP | 68PF | 5% | 50V |
| C293 | 1-163 101 00 | CERAMIC CHIP | 22PF | 5% | 50V |
| C294 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | 50V | (640D/740D) |
| C295 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | 50V | (640D/740D) |
| C297 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C298 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C299 | 1-126-157-11 | ELECT | 10uF | 20% | 16V |
| C300 | 1-126-157-11 | ELECT | 10uF | 20% | 16V |
| C301 | 1 163-131-00 | CERAMIC CHIP | 390PF | 5% | 50V |
| C302 | 1-163 109-00 | CERAMIC CHIP | 47PF | 5% | 50V |
| C309 | 1-163-103-00 | CERAMIC CHIP | 27PF | 5% | 50V |
| C310 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C311 | 1 163 125-00 | CERAMIC CHIP | 220PF | 5% | 50V |
| C312 | 1-163-125-00 | CERAMIC CHIP | 220PF | 5% | 50V |
| C313 | 1-124-443-00 | ELECT | 100uF | 20% | 10V |
| C314 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C601 | 1-163-125-00 | CERAMIC CHIP | 220PF | 5% | 50V |
| C602 | 1-124-257-00 | ELECT | 2.2uF | 20% | 50V |
| C603 | 1-163-117-00 | CERAMIC CHIP | 100PF | 5% | 50V |
| C604 | 1-163-237-11 | CERAMIC CHIP | 27PF | 5% | 50V |
| C605 | 1 163 237-11 | CERAMIC CHIP | 27PF | 5% | 50V |
| C606 | 1-163-111-00 | CERAMIC CHIP | 56PF | 5% | 50V |
| C607 | 1-163-117-00 | CERAMIC CHIP | 100PF | 5% | 50V |
| C608 | 1 163 035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C609 | 1-124-589-11 | ELECT | 47uF | 20% | 16V |
| C610 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C611 | 1-124-589-11 | ELECT | 47uF | 20% | 16V |
| C612 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C613 | 1-163-009-11 | CERAMIC CHIP | 0.001uF | 10% | 50V |
| C614 | 1-163-125-00 | CERAMIC CHIP | 220PF | 5% | 50V |
| C615 | 1-126-163-11 | ELECT | 4.7uF | 20% | 50V |
| C616 | 1-163-237-11 | CERAMIC CHIP | 27PF | 5% | 50V |
| C617 | 1-163-227-11 | CERAMIC CHIP | 10PF | 5% | 50V |
| C618 | 1-163-133-00 | CERAMIC CHIP | 470PF | 5% | 50V |
| C619 | 1-163-239-11 | CERAMIC CHIP | 33PF | 5% | 50V |
| C620 | 1-163-243-11 | CERAMIC CHIP | 47PF | 5% | 50V |
| C621 | 1-163 031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C622 | 1-126-157-11 | ELECT | 10uF | 20% | 16V |
| C623 | 1-163-037-11 | CERAMIC CHIP | 0.022uF | 10% | 25V |
| C624 | 1-163-101-00 | CERAMIC CHIP | 22PF | 5% | 50V |
| C625 | 1-124-589-11 | ELECT | 47uF | 20% | 16V |
| C626 | 1-126-177-11 | ELECT | 100uF | 20% | 10V |
| C627 | 1-163-019-00 | CERAMIC CHIP | 0.0068uF | 10% | 50V |
| C628 | 1 126 301 11 | ELECT | 1uF | 20% | 50V |
| C629 | 1-126-177-11 | ELECT | 100uF | 20% | 10V |

| Ref.No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C630 | 1-163-121-00 | CERAMIC CHIP | 150PF | 5% | 50V |
| C631 | 1-163-017-00 | CERAMIC CHIP | 0.0047uF | 5% | 50V |
| C632 | 1-126-177 11 | ELECT | 100uF | 20% | 10V |
| C634 | 1-163-129-00 | CERAMIC CHIP | 330PF | 5% | 50V |
| C635 | 1 163 113 00 | CERAMIC CHIP | 68PF | 5% | 50V |
| C636 | 1-126-177-11 | ELECT | 100uF | 20% | 10V |
| C637 | 1-164-161-11 | CERAMIC CHIP | 0.0022uF | 10% | 100V |
| C638 | 1-124-409-11 | ELECT, NONPOLAR | 1uF | 20% | 50V |
| C639 | 1-163-909-11 | CERAMIC CHIP | 0.033uF | 10% | 25V |
| C640 | 1-126-177-11 | ELECT | 100uF | 20% | 10V |
| C641 | 1-124-465-00 | ELECT | 0.47uF | 20% | 50V |
| C642 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C643 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C644 | 1-164-182-11 | CERAMIC CHIP | 0.0033uF | 10% | 50V |
| C645 | 1-163-986-00 | CERAMIC CHIP | 0.027uF | 10% | 25V |
| C646 | 1-126-177-11 | ELECT | 100uF | 20% | 10V |
| C647 | 1-126-301-11 | ELECT | 1uF | 20% | 50V |
| C648 | 1-163-222-11 | CERAMIC CHIP | 5PF | 0.25PF | 50V |
| C649 | 1-163-235-11 | CERAMIC CHIP | 22PF | 5% | 50V |
| C650 | 1-163-105-00 | CERAMIC CHIP | 33PF | 5% | 50V |
| C651 | 1-126-177-11 | ELECT | 100uF | 20% | 10V |
| C652 | 1-126 163 11 | ELECT | 4.7uF | 20% | 50V |
| C653 | 1-164-182-11 | CERAMIC CHIP | 0.0033uF | 10% | 50V |
| C654 | 1-163-245-11 | CERAMIC CHIP | 56PF | 5% | 50V |
| C655 | 1-126-163-11 | ELECT | 4.7uF | 20% | 50V |
| C656 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C657 | 1-124-589-11 | ELECT | 47uF | 20% | 16V |
| C658 | 1-163-117-00 | CERAMIC CHIP | 100PF | 5% | 50V |
| C659 | 1-163 035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C660 | 1-126-177-11 | ELECT | 100uF | 20% | 10V |
| C661 | 1-124-598-11 | ELECT | 22uF | 20% | 25V |
| C662 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C663 | 1-164-182-11 | CERAMIC CHIP | 0.0033uF | 10% | 50V |
| C664 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C665 | 1-126-157-11 | ELECT | 10uF | 20% | 16V |
| C666 | 1 126 157 11 | ELECT | 10uF | 20% | 16V |
| C667 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C668 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C669 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V |
| C670 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V |
| C671 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V |
| C672 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C673 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C674 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C677 | 1-163-113-00 | CERAMIC CHIP | 68PF | 5% | 50V |
| C801 | 1-124-768-11 | ELECT | 4.7uF | 20% | 50V |
| C802 | 1-124 767 00 | ELECT | 2.2uF | 20% | 50V |
| C803 | 1-124-126-00 | ELECT | 47uF | 20% | 10V |
| C804 | 1-124-126-00 | ELECT | 47uF | 20% | 10V |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C805 | 1-126-320-11 | ELECT, NONPOLAR | 10uF | 20% | 16V |
| C806 | 1-163-077-00 | CERAMIC CHIP | 0.1uF | 10% | 25V |
| C807 | 1-163-020-00 | CERAMIC CHIP | 0.0082uF | 10% | 50V |
| C808 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C809 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C810 | 1-163-235-11 | CERAMIC CHIP | 22PF | 5% | 50V |
| C811 | 1-163-235-11 | CERAMIC CHIP | 22PF | 5% | 50V |
| C812 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C815 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C816 | 1-124-126-00 | ELECT | 47uF | 20% | 10V |
| C817 | 1-124-126-00 | ELECT | 47uF | 20% | 10V |
| C818 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C819 | 1-163-023-00 | CERAMIC CHIP | 0.015uF | 5% | 50V |
| C820 | 1-124-907-11 | ELECT | 10uF | 20% | 50V |
| C821 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C822 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C823 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C824 | 1-164-161-11 | CERAMIC CHIP | 0.0022uF | 10% | 100V |
| C825 | 1-164-161-11 | CERAMIC CHIP | 0.0022uF | 10% | 100V |
| C826 | 1-163-241-11 | CERAMIC CHIP | 39PF | 5% | 50V |
| C827 | 1-163-106-00 | CERAMIC CHIP | 36PF | 5% | 50V |
| C828 | 1-163-257-11 | CERAMIC CHIP | 180PF | 5% | 50V |
| C829 | 1-163-133-00 | CERAMIC CHIP | 470PF | 5% | 50V |
| C832 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C840 | 1-124-443-00 | ELECT | 100uF | 20% | 10V |
| C841 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C842 | 1-124-443-00 | ELECT | 100uF | 20% | 10V |
| C843 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C844 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C845 | 1-163-031-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C850 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V |
| C851 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V |
| C860 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C901 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C902 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C904 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V |
| C905 | 1-126-163-11 | ELECT | 4.7uF | 20% | 50V |
| C906 | 1-126-049-11 | ELECT | 22uF | 20% | 10V |
| C907 | 1-126-163-11 | ELECT | 4.7uF | 20% | 50V |
| C908 | 1-126-049-11 | ELECT | 22uF | 20% | 25V |
| C909 | 1-126-163-11 | ELECT | 4.7uF | 20% | 50V |
| C910 | 1-126-163-11 | ELECT | 4.7uF | 20% | 50V |
| C911 | 1-126-049-11 | ELECT | 22uF | 20% | 10V |
| C912 | 1-126-163-11 | ELECT | 4.7uF | 20% | 50V |
| C913 | 1-126-049-11 | ELECT | 22uF | 20% | 25V |
| C914 | 1-126-163-11 | ELECT | 4.7uF | 20% | 50V |
| C915 | 1-136-250-11 | FILM | 0.001uF | 3% | 100V |
| C916 | 1-136-232-11 | FILM | 0.0043uF | 3% | 100V |
| C917 | 1-136-250-11 | FILM | 0.001uF | 3% | 100V |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C918 | 1-126-023-11 | ELECT | 100uF | 20% | 25V |
| C919 | 1-126-060-11 | ELECT | 22uF | 20% | 63V |
| C920 | 1-136-250-11 | FILM | 0.001uF | 3% | 100V |
| C921 | 1-126-023-11 | ELECT | 100uF | 20% | 25V |
| C922 | 1-136-250-11 | FILM | 0.001uF | 3% | 100V |
| C923 | 1-136-232-11 | FILM | 0.0043uF | 3% | 100V |
| C924 | 1-136-250-11 | FILM | 0.001uF | 3% | 100V |
| C925 | 1-126-023-11 | ELECT | 100uF | 20% | 25V |
| C926 | 1-126-060-11 | ELECT | 22uF | 20% | 63V |
| C927 | 1-136-250-11 | FILM | 0.001uF | 3% | 100V |
| C928 | 1-126-023-11 | ELECT | 100uF | 20% | 25V |
| C929 | 1-124-563-11 | ELECT | 2200uF | 20% | 25V |
| C930 | 1-124-563-11 | ELECT | 2200uF | 20% | 25V |
| C932 | 1-124-126-00 | ELECT | 47uF | 20% | 10V |
| C933 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V |
| C934 | 1-126-013-11 | ELECT | 1000uF | 20% | 16V |
| C935 | 1-126-013-11 | ELECT | 1000uF | 20% | 16V |
| C936 | 1-126-044-11 | ELECT | 1uF | 20% | 50V |
| C937 | 1-124-478-11 | ELECT | 100uF | 20% | 25V |
| C938 | | | 0.047uF | | |
| C938 | 1-163-035-00 | CERAMIC CHIP | 0.0047uF | 50V (MDP 440) | |
| C939 | 1-164-182-11 | CERAMIC CHIP | 0.0033uF | 10% | 50V |
| C940 | 1-126-013-11 | ELECT | 1000uF | 20% | 16V |
| C941 | 1-126-013-11 | ELECT | 1000uF | 20% | 16V |
| C942 | 1-124-477-11 | ELECT | 47uF | 20% | 25V |
| C943 | 1-163-019-00 | CERAMIC CHIP | 0.0068uF | 10% | 50V |
| C950 | 1-126-177-11 | ELECT | 180uF | 20% | 10V |
| C951 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V |
| C952 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V |
| C953 | 1-126-320-11 | ELECT, NONPOLAR | 10uF | 20% | 16V |
| C960 | 1-124-997-11 | ELECT | 470uF | 20% | 6.3V |

< FILTER >

| | | |
|---|---|---|
| CF101 | 1-567-657-11 | FILTER, CERAMIC (SFS-MC TYPE) |
| CF102 | 1-527-831-00 | FILTER, CERAMIC (MDP 640D/740D) |

< CONNECTOR >

| | | | |
|---|---|---|---|
| * CN101 | 1-566-706-11 | CONNECTOR, BOARD TO BOARD 12P | (640D/740D) |
| * CN601 | 1-564-032-00 | PIN, CONNECTOR 7P | |
| CN602 | 1-563-493-11 | CONNECTOR, F.P.C 20P | |
| CN603 | 1-506-483-21 | CONNECTOR 4P, MALE | |
| CN604 | 1-506-484-11 | CONNECTOR 5P, MALE | |
| CN605 | 1-506-486-11 | PIN, CONNECTOR 7P | |
| CN606 | 1-506-481-11 | CONNECTOR 2P, MALE | |
| CN607 | 1-506-482-11 | CONNECTOR 3P, MALE | |
| CN608 | 1-506-481-11 | CONNECTOR 2P, MALE | |
| * CN801 | 1-566-706-11 | CONNECTOR, BOARD TO BOARD 12P | |
| * CN802 | 1-564-028-00 | PIN, CONNECTOR 3P | |

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| CN803 | 1-506-471-11 | CONNECTOR 6P, MALE | |
| | | < JACK > | |
| CNJ101 | 1-561-534-82 | SOCKET 21P | |
| CNJ102 | 1-565-351-41 | JACK, PIN 3P (LINE OUT) | |
| CNJ103 | 8-759-977-71 | IC GP-1F31T (DIGITAL OUT OPTICAL) | |
| | | < TRIMMER > | |
| CV601 | 1-141-227-00 | CAP, TRIMMER 20PF | |
| CV602 | 1-141-227-00 | CAP, TRIMMER 20PF | |
| CV603 | 1-141-297-11 | CAP, TRIMMER 90PF | |
| | | < DIODE > | |
| D101 | 8-719-110-33 | DIODE RD12ES-B3 | |
| D104 | 8-719-911-19 | DIODE 1SS119 | |
| D105 | 8-719-911-19 | DIODE 1SS119 | |
| D106 | 8-719-106-08 | DIODE RD6.2M-B2 | |
| D601 | 8-719-911-19 | DIODE 1SS119 | |
| D602 | 8-719-911-19 | DIODE 1SS119 | |
| D603 | 8-719-911-19 | DIODE 1SS119 | |
| D604 | 8-719-907-19 | DIODE FC52M-5 | |
| D606 | 8-719-911-19 | DIODE 1SS119 | |
| D609 | 8-719-911-19 | DIODE 1SS119 | |
| D610 | 8-719-911-19 | DIODE 1SS119 | |
| D611 | 8-719-110-03 | DIODE RD7.5ES-B2 | |
| D612 | 8-719-911-19 | DIODE 1SS119 | |
| D613 | 8-719-911-19 | DIODE 1SS119 | |
| D801 | 8-719-902-79 | DIODE KV1236Z | |
| D802 | 8-719-907-19 | DIODE FC52M-5 | |
| D803 | 8-719-907-19 | DIODE FC52M-5 | |
| D804 | 8-719-911-19 | DIODE 1SS119 | |
| D805 | 8-719-911-19 | DIODE 1SS119 | |
| D806 | 8-719-400-18 | DIODE MA152WK | |
| D807 | 8-719-400-18 | DIODE MA152WK | |
| D808 | 8-719-400-18 | DIODE MA152WK | |
| D811 | 8-719-911-19 | DIODE 1SS119 | |
| D812 | 8-719-911-19 | DIODE 1SS119 | |
| D813 | 8-719-911-19 | DIODE 1SS119 | |
| D815 | 8-719-911-19 | DIODE 1SS119 | |
| D820 | 8-719-200-91 | DIODE 11EQS10 | |
| D821 | 8-719-200-91 | DIODE 11EQS10 | |
| D822 | 8-719-200-91 | DIODE 11EQS10 | |
| D823 | 8-719-200-91 | DIODE 11EQS10 | |
| D903 | 8-719-911-19 | DIODE 1SS119 | |
| D910 | 8-719-911-19 | DIODE 1SS119 | |
| D911 | 8-719-911-19 | DIODE 1SS119 | |

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| | | < FILTER > | |
| FL101 | 1-236-580-11 | FILTER, LOW PASS | |
| FL102 | 1-235-943-11 | BPF (MDP-640D/740D) | |
| FL103 | 1-236-262-11 | FILTER, BAND PASS | |
| FL104 | 1-236-580-11 | FILTER, LOW PASS | |
| FL105 | 1-409-431-11 | COIL, TRAP (MDP-640D/740D) | |
| FL106 | 1-409-447-11 | COIL, TRAP | |
| FL601 | 1-421-927-21 | FILTER, NOISE | |
| FL602 | 1-235-922-11 | FILTER, LOW PASS (1.7MHZ) | |
| FL603 | 1-421-927-21 | FILTER, NOISE | |
| FL801 | 1-424-031-11 | FILTER, NOISE | |
| FL802 | 1-424-031-11 | FILTER, NOISE | |
| FL803 | 1-424-031-11 | FILTER, NOISE | |
| FL804 | 1-424-031-11 | FILTER, NOISE | |
| FL805 | 1-424-031-11 | FILTER, NOISE | |
| FL806 | 1-424-031-11 | FILTER, NOISE | |
| FL807 | 1-424-031-11 | FILTER, NOISE | |
| FL808 | 1-424-031-11 | FILTER, NOISE | |
| FL809 | 1-424-031-11 | FILTER, NOISE | |
| FL810 | 1-424-031-11 | FILTER, NOISE | |
| FL811 | 1-424-031-11 | FILTER, NOISE | |
| FL812 | 1-424-031-11 | FILTER, NOISE | |
| | | < IC > | |
| IC101 | 8-759-982-10 | IC RC7809FA | |
| IC102 | 8-759-941-68 | IC BA7131F | |
| IC103 | 8-759-941-68 | IC BA7131F (MDP-640D/740D) | |
| IC104 | 8-752-000-12 | IC CX20061 | |
| IC105 | 8-752-322-34 | IC CXL5003M | |
| IC106 | 8-752-055-36 | IC CXA1254Q | |
| IC107 | 8-759-941-68 | IC BA7131F (MDP-640D/740D) | |
| IC108 | 8-759-907-81 | IC SN74LS221NS | |
| IC109 | 8-759-502-69 | IC CXD1132-MS | |
| IC110 | 8-759-100-95 | IC uPC324G2 | |
| IC111 | 8-752-055-37 | IC CXA1255Q | |
| IC113 | 8-759-233-64 | IC TC74HC00AF | |
| IC601 | 8-759-305-28 | IC MD74HC4040EP | |
| IC602 | 8-759-941-68 | IC BA7131F | |
| IC603 | 8-759-634-74 | IC M50455-080FP | |
| IC604 | 8-759-300-71 | IC TC4053BF (MDP-640D/740D) | |
| IC605 | 8-759-902-88 | IC SN74LS123NS | |
| IC606 | 8-759-009-19 | IC MC14081BF | |
| IC607 | 8-759-981-65 | IC LM2903M | |
| IC608 | 8-759-207-28 | IC TC9015P | |
| IC609 | 8-759-300-71 | IC MD14053BFP | |
| IC610 | 8-759-603-24 | IC CX20197 | |
| IC611 | 8-759-300-71 | IC MD14053BFP | |
| IC612 | 8-752-033-14 | IC CXA1081Q | |

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| IC613 | 8-759-505-67 | IC MB89795-127 | |
| IC614 | 8-759-987-71 | IC MSM72HD32GS-K | |
| IC615 | 8-759-100-96 | IC uPC4558G2 | |
| IC616 | 8-759-008-67 | IC MC14066BF | |
| IC617 | 8-759-100-96 | IC uPC4558G2 | |
| IC618 | 8-759-231-92 | IC TA7291P | |
| IC619 | 8-759-201-53 | IC TC40H000F | |
| IC620 | 8-759-008-06 | IC MC14052BF | |
| IC621 | 8-759-300-71 | IC TC4053BF | |
| IC801 | 8-752-325-59 | IC CXD1165Q | |
| IC802 | 8-759-908-17 | IC TL082CPS | |
| IC803 | 8-759-908-17 | IC TL082CPS | |
| IC805 | 8-759-927-29 | IC SN74HCL04ANS | |
| IC809 | 8-759-008-67 | IC MC14066BF | |
| IC811 | 8-752-328-61 | IC CXD1244S | |
| IC812 | 8-759-926-17 | IC SN74HC153ANS | |
| IC813 | 8-759-925-00 | IC SN74HC74ANS | |
| IC814 | 8-759-982-44 | IC RC79L05AA | |
| ⚠IC816 | 8-759-231-53 | IC M5F7805 | |
| IC817 | 8-759-979-09 | IC PCM58P | |
| IC818 | 8-759-979-09 | IC PCM58P | |
| IC819 | 8-759-982-03 | IC RC5532D-D | |
| IC820 | 8-759-982-03 | IC RC5532D-D | |
| IC821 | 8-759-231-58 | IC M5F7812L | |
| IC822 | 8-759-245-86 | IC TA79L12S | |
| IC823 | 8-759-981-92 | IC RC4558M | |
| IC824 | 8-759-233-74 | IC TC74HCU04F | |

< JUMPER RESISTOR >

| | | | | | | |
|---|---|---|---|---|---|---|
| JR101 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | (MDP-440) |
| JR102 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | (MDP-440) |
| JR103 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | (MDP-440) |
| JR601 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | (MDP-440) |
| JR602 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | (MDP-440) |
| JR603 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | (MDP-440) |
| JR604 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | (MDP-440) |

< COIL >

| | | |
|---|---|---|
| L101 | 1-408-421-00 | INDUCTOR 100uH |
| L102 | 1-408-421-00 | INDUCTOR 100uH |
| L103 | 1-408-417-00 | INDUCTOR 47uH |
| L104 | 1-408-417-00 | INDUCTOR 47uH |
| L105 | 1-408-419-00 | INDUCTOR 68uH |
| L106 | 1-408-417-00 | INDUCTOR 47uH |
| L107 | 1-408-411-00 | INDUCTOR 15uH |
| L108 | 1-408-419-00 | INDUCTOR 68uH |
| L109 | 1-408-609-41 | INDUCTOR 33uH |
| L110 | 1-408-421-00 | INDUCTOR 100uH |
| L111 | 1-408-425-00 | INDUCTOR 220uH |
| L112 | 1-408-417-00 | INDUCTOR 47uH |
| L113 | 1-408-421-00 | INDUCTOR 100uH |
| L114 | 1-408-421-00 | INDUCTOR 100uH |
| L115 | 1-408-609-41 | INDUCTOR 33uH |
| L116 | 1-408-421-00 | INDUCTOR 100uH |
| L117 | 1-408-421-00 | INDUCTOR 100uH |
| L118 | 1-408-421-00 | INDUCTOR 100uH |
| L119 | 1-408-424-00 | INDUCTOR 180uH |
| L120 | 1-408-421-00 | INDUCTOR 100uH |
| L123 | 1-408-421-00 | INDUCTOR 100uH |
| L124 | 1-408-417-00 | INDUCTOR 47uH |
| L125 | 1-408-421-00 | INDUCTOR 100uH |
| L601 | 1-408-411-00 | INDUCTOR 15uH |
| L602 | 1-408-421-00 | INDUCTOR 100uH |
| L603 | 1-408-409-00 | INDUCTOR 10uH |
| L604 | 1-408-420-00 | INDUCTOR 82uH |
| L605 | 1-408-420-00 | INDUCTOR 82uH |
| L606 | 1-408-409-00 | INDUCTOR 10uH |
| L608 | 1-408-409-00 | INDUCTOR 10uH |
| L609 | 1-408-409-00 | INDUCTOR 10uH |
| L803 | 1-424-033-21 | FILTER, NOISE |
| L805 | 1-424-033-21 | FILTER, NOISE |

< VALIABLE COIL >

| | | |
|---|---|---|
| LV801 | 1-426-212-11 | COIL (RF) |

< TRANSISTOR >

| | | | |
|---|---|---|---|
| Q101 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q102 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q103 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q104 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q105 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q106 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q107 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q108 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q109 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q110 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q111 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q112 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q114 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q115 | 8-729-100-66 | TRANSISTOR 2SC1623 | (MDP 640D/740D) |
| Q116 | 8-729-100-66 | TRANSISTOR 2SC1623 | (MDP-640D/740D) |
| Q117 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q118 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q119 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q120 | 8-729-901-01 | TRANSISTOR DTC144EK | (MDP 640D/740D) |
| Q121 | 8-729-100-66 | TRANSISTOR 2SC1623 | |

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety.
Replace only with part number specified.

## MP-31

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| Q122 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q123 | 8-729-901-01 | TRANSISTOR DTC144EK (MDP-640D/740D) | |
| Q124 | 8-729-901-01 | TRANSISTOR DTC144EK (MDP-640D/740D) | |
| Q125 | 8-729-901-01 | TRANSISTOR DTC144EK (MDP-640D/740D) | |
| Q126 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q128 | 8-729-100-66 | TRANSISTOR 2SC1623 (MDP-640D/740D) | |
| Q129 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q134 | 8-729-901-05 | TRANSISTOR DTA124EK | |
| Q135 | 8-729-901-01 | TRANSISTOR DTC144EK (MDP-640D/740D) | |
| Q136 | 8-729-901-01 | TRANSISTOR DTC144EK (MDP-640D/740D) | |
| Q137 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q138 | 8-729-140-75 | TRANSISTOR 2SD999-CLCK | |
| Q139 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q140 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q141 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q142 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q143 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q144 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q145 | 8-729-901-00 | TRANSISTOR DTC124EK | |
| Q148 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q150 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q151 | 8-729-901-01 | TRANSISTOR DTC144EK (MDP-640D/740D) | |
| Q152 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q153 | 8-729-901-01 | TRANSISTOR DTC144EK | |
| Q154 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q155 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q156 | 8-729-903-10 | TRANSISTOR FW01 | |
| Q157 | 8-729-903-10 | TRANSISTOR FW01 | |
| Q158 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q159 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q160 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q161 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q162 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q163 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q164 | 8-729-100-66 | TRANSISTOR 2SC1623 (MDP-640D/740D) | |
| Q165 | 8-729-100-66 | TRANSISTOR 2SC1623 (MDP-640D/740D) | |
| Q166 | 8-729-901-01 | TRANSISTOR DTC144EK | |
| Q167 | 8-729-901-01 | TRANSISTOR DTC144EK (MDP-640D/740D) | |
| Q168 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q169 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q170 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q171 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q172 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q601 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q602 | 8-729-901-01 | TRANSISTOR DTC144EK | |
| Q603 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q604 | 8-729-901-01 | TRANSISTOR DTC144EK | |
| Q605 | 8-729-901-01 | TRANSISTOR DTC144EK | |
| Q606 | 8-729-100-66 | TRANSISTOR 2SC1623 | |

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| Q607 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q610 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q611 | 8-729-140-97 | TRANSISTOR 2SB734-34 | |
| Q612 | 8-729-901-00 | TRANSISTOR DTC124EK | |
| Q613 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q614 | 8-729-100-66 | TRANSISTOR 2SC1623 | |
| Q615 | 8-729-901-00 | TRANSISTOR DTC124EK | |
| Q618 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q801 | 8-729-900-53 | TRANSISTOR DTC114EK | |
| Q802 | 8-729-100-67 | TRANSISTOR 2SC1623 L7 | |
| Q803 | 8-729-900-53 | TRANSISTOR DTC114EK | |
| Q804 | 8-729-900-53 | TRANSISTOR DTC114EK | |
| Q806 | 8-729-901-05 | TRANSISTOR DTA124EK | |
| Q807 | 8-729-900-53 | TRANSISTOR DTC114EK | |
| Q808 | 8-729-900-53 | TRANSISTOR DTC114EK | |
| Q809 | 8-729-901-06 | TRANSISTOR DTA144EK | |
| Q810 | 8-729-901-06 | TRANSISTOR DTA144EK | |
| Q811 | 8-729-216-22 | TRANSISTOR 2SA1162 | |
| Q812 | 8-729-202-38 | TRANSISTOR 2SC3326S | |
| Q813 | 8-729-202-38 | TRANSISTOR 2SC3326S | |
| Q814 | 8-729-901-05 | TRANSISTOR DTA124EK | |
| Q815 | 8-729-901-05 | TRANSISTOR DTA124EK | |

< RESISTOR >

| Ref.No. | Part No. | Description | | | |
|---|---|---|---|---|---|
| ⚠R101 | 1-212-950-00 | FUSIBLE | 4.7 | 5% | 1/2W F |
| R102 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W |
| R103 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R104 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W |
| R105 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R106 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R107 | 1-216-045-00 | METAL CHIP | 680 | 5% | 1/10W |
| R108 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R109 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R110 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W |
| R111 | 1-216-037-00 | METAL CHIP | 330 | 5% | 1/10W |
| R112 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W |
| R113 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W |
| R114 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |
| R115 | 1-216-069-00 | METAL CHIP | 6.8K | 5% | 1/10W |
| R116 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W |
| R117 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R118 | 1-216-063-00 | METAL CHIP | 3.9K | 5% | 1/10W |
| R119 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R120 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |
| R121 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R122 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R123 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W |
| R124 | 1-216-071-00 | METAL CHIP | 8.2K | 5% | 1/10W |
| R125 | 1-216-039-00 | METAL CHIP | 390 | 5% | 1/10W |

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety. Replace only with part number specified.

| Ref.No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R126 | 1 216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |
| R127 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |
| R128 | 1-216-049 00 | METAL CHIP | 1K | 5% | 1/10W | |
| R129 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R131 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R132 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W | |
| R133 | 1 216-121-00 | METAL CHIP | 1M | 5% | 1/10W | |
| R134 | 1 216 045-00 | METAL CHIP | 680 | 5% | 1/10W | |
| R135 | 1-216-057 00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R136 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R140 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R141 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R142 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | (640D/740D) |
| R143 | 1-216 045-00 | METAL CHIP | 680 | 5% | 1/10W | (640D/740D) |
| R144 | 1-216-051 00 | METAL CHIP | 1.2K | 5% | 1/10W | (640D/740D) |
| R145 | 1-216-061 00 | METAL CHIP | 3.3K | 5% | 1/10W | (640D/740D) |
| R146 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R147 | 1-216-043-00 | METAL CHIP | 560 | 5% | 1/10W | |
| R148 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |
| R149 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R150 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W | |
| R151 | 1-216-025-00 | METAL CHIP | 100 | 5% | 1/10W | |
| R152 | 1-216 059-00 | METAL CHIP | 2.7K | 5% | 1/10W | |
| R153 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R154 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R155 | 1-216 049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R157 | 1-216 083-00 | METAL CHIP | 27K | 5% | 1/10W | |
| R158 | 1-216-079 00 | METAL CHIP | 18K | 5% | 1/10W | |
| R159 | 1-216-075 00 | METAL CHIP | 12K | 5% | 1/10W | |
| R160 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R161 | 1 216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |
| R162 | 1-216 059-00 | METAL CHIP | 2.7K | 5% | 1/10W | |
| R163 | 1-216-115-00 | METAL CHIP | 560K | 5% | 1/10W | |
| R164 | 1-216-021-00 | METAL CHIP | 68 | 5% | 1/10W | |
| R165 | 1-249-410-11 | CARBON | 270 | 5% | 1/4W | |
| R166 | 1-216-021-00 | METAL CHIP | 68 | 5% | 1/10W | |
| R167 | 1-216 047-00 | METAL CHIP | 820 | 5% | 1/10W | (640D/740D) |
| R169 | 1-216-055 00 | METAL CHIP | 1.8K | 5% | 1/10W | |
| R170 | 1-216-113-00 | METAL CHIP | 470K | 5% | 1/10W | (640D/740D) |
| R171 | 1 216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R172 | 1-216-748-11 | METAL CHIP | 39K | 1% | 1/10W | |
| R175 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W | |
| R176 | 1 216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |
| R177 | 1-216-049 00 | METAL CHIP | 1K | 5% | 1/10W | |
| R178 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R179 | 1-216-055-00 | METAL CHIP | 1.8K | 5% | 1/10W | |
| R180 | 1-216-055 00 | METAL CHIP | 1.8K | 5% | 1/10W | (640D/740D) |
| R181 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | (640D/740D) |
| R182 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |

| Ref.No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R183 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | (640D/740D) |
| R184 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R185 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R186 | 1 216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R190 | 1-216-039 00 | METAL CHIP | 390 | 5% | 1/10W | |
| R191 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W | |
| R192 | 1-216-748-11 | METAL CHIP | 39K | 1% | 1/10W | |
| R193 | 1-216-091-00 | METAL CHIP | 56K | 5% | 1/10W | (640D/740D) |
| R195 | 1-216-043-00 | METAL CHIP | 560 | 5% | 1/10W | |
| R197 | 1-216-097 00 | METAL CHIP | 100K | 5% | 1/10W | |
| R205 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R207 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |
| R208 | 1-216-699-11 | METAL CHIP | 100K | 0.5% | 1/10W | |
| R209 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R210 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R211 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W | |
| R212 | 1-216 057 00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R213 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R214 | 1-216-113-00 | METAL CHIP | 470K | 5% | 1/10W | |
| R215 | 1-216-063-00 | METAL CHIP | 3.9K | 5% | 1/10W | |
| R216 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R217 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W | |
| R218 | 1 216-113-00 | METAL CHIP | 470K | 5% | 1/10W | |
| R219 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R220 | 1-216-079-00 | METAL CHIP | 18K | 5% | 1/10W | |
| R221 | 1-216-079-00 | METAL CHIP | 18K | 5% | 1/10W | |
| R222 | 1 216 073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R223 | 1-216-113 00 | METAL CHIP | 470K | 5% | 1/10W | |
| R224 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W | |
| R226 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R227 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R228 | 1 216 073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R229 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R230 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R231 | 1-216-063 00 | METAL CHIP | 3.9K | 5% | 1/10W | |
| R232 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R233 | 1 216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R234 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R235 | 1-216-069-00 | METAL CHIP | 6.8K | 5% | 1/10W | |
| R236 | 1-216-037-00 | METAL CHIP | 330 | 5% | 1/10W | |
| R237 | 1-216-079 00 | METAL CHIP | 18K | 5% | 1/10W | |
| R238 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R239 | 1-216-115-00 | METAL CHIP | 560K | 5% | 1/10W | (640D/740D) |
| R240 | 1-216-121 00 | METAL CHIP | 1M | 5% | 1/10W | |
| R241 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R242 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R243 | 1-216-748 11 | METAL CHIP | 39K | 1% | 1/10W | |
| R244 | 1-216-079-00 | METAL CHIP | 18K | 5% | 1/10W | |
| R245 | 1-216-121-00 | METAL CHIP | 1M | 5% | 1/10W | |

## MP-31

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R246 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R247 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R248 | 1 216 083 00 | METAL CHIP | 27K | 5% | 1/10W | |
| R249 | 1-216 083 00 | METAL CHIP | 27K | 5% | 1/10W | |
| R250 | 1-216-113-00 | METAL CHIP | 470K | 5% | 1/10W | |
| R252 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R252 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W | |
| R253 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R254 | 1-216-113-00 | METAL CHIP | 470K | 5% | 1/10W | |
| R255 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R256 | 1-216-095-00 | METAL CHIP | 82K | 5% | 1/10W | |
| R257 | 1-216-113-00 | METAL CHIP | 470K | 5% | 1/10W | |
| R258 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R259 | 1 216 109 00 | METAL CHIP | 330K | 5% | 1/10W | |
| R260 | 1 216 089 00 | METAL CHIP | 47K | 5% | 1/10W | |
| R261 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | (640D/740D) |
| R261 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | (MDP-440) |
| R262 | 1 216-109-00 | METAL CHIP | 330K | 5% | 1/10W | (640D/740D) |
| R263 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W | (640D/740D) |
| R264 | 1-216-740-11 | METAL CHIP | 39K | 1% | 1/10W | (640D/740D) |
| R265 | 1 216-079-00 | METAL CHIP | 18K | 5% | 1/10W | |
| R266 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W | |
| R267 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W | |
| R268 | 1 216 295 00 | METAL CHIP | 0 | | 1/10W | |
| R269 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W | |
| R270 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W | |
| R271 | 1-216-025-00 | METAL CHIP | 100 | 5% | 1/10W | |
| R272 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R273 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |
| R274 | 1-216-043-00 | METAL CHIP | 560 | 5% | 1/10W | |
| R275 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R276 | 1-216-099-00 | METAL CHIP | 120K | 5% | 1/10W | (640D/740D) |
| R277 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W | |
| R278 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R279 | 1 249-416 11 | CARBON | 820 | 5% | 1/4W | |
| R284 | 1-216-117-00 | METAL CHIP | 680K | 5% | 1/10W | |
| R285 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R286 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W | |
| R290 | 1-216-091-00 | METAL CHIP | 56K | 5% | 1/10W | |
| R291 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R292 | 1 216 863 00 | METAL CHIP | 3.9K | 5% | 1/10W | |
| R293 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | (640D/740D) |
| R293 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | (MDP-440) |
| R294 | 1-216-035-00 | METAL CHIP | 270 | 5% | 1/10W | (640D/740D) |
| R294 | 1-216-295-00 | METAL GLAZE | 0 | 5% | 1/10W | (MDP-440) |
| R295 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R296 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R297 | 1 215 037 00 | METAL CHIP | 330 | 5% | 1/10W | |
| R298 | 1-216-031-00 | METAL CHIP | 180 | 5% | 1/10W | |

| Ref. No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R299 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R300 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R301 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R302 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R303 | 1 216 033 00 | METAL CHIP | 220 | 5% | 1/10W | |
| R304 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R305 | 1-216-055-00 | METAL CHIP | 1.8K | 5% | 1/10W | |
| R306 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R307 | 1 216 047 00 | METAL CHIP | 820 | 5% | 1/10W | |
| R308 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R309 | 1-216-748-11 | METAL CHIP | 39K | 1% | 1/10W | |
| R310 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R311 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R312 | 1-216-081 00 | METAL CHIP | 22K | 5% | 1/10W | |
| R313 | 1 216 041 00 | METAL CHIP | 470 | 5% | 1/10W | |
| R314 | 1 216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W | |
| R316 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W | |
| R317 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W | |
| R318 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R319 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R320 | 1-216-057 00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R321 | 1 216 047-00 | METAL CHIP | 820 | 5% | 1/10W | |
| R322 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W | |
| R323 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R324 | 1 216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R325 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R326 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W | |
| R327 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R328 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R329 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R330 | 1-216-047-00 | METAL CHIP | 820 | 5% | 1/10W | |
| R331 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R332 | 1 216 047 00 | METAL CHIP | 820 | 5% | 1/10W | |
| R333 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W | |
| R334 | 1-216 051 00 | METAL CHIP | 1.2K | 5% | 1/10W | |
| R335 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R336 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R337 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W | |
| R338 | 1-216 049 00 | METAL CHIP | 1K | 5% | 1/10W | |
| R339 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R340 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W | |
| R341 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W | |
| R342 | 1-216-121 00 | METAL CHIP | 1M | 5% | 1/10W | |
| R343 | 1 216-121-00 | METAL CHIP | 1M | 5% | 1/10W | |
| R344 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | (640D/740D) |
| R345 | 1-216-095-00 | METAL CHIP | 82K | 5% | 1/10W | (640D/740D) |
| R346 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | (640D/740D) |
| R347 | 1 216 095-00 | METAL CHIP | 82K | 5% | 1/10W | (640D/740D) |
| R348 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | (640D/740D) |

| Ref.No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R349 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | (640D/740D) |
| R350 | 1-216-047-00 | METAL CHIP | 820 | 5% | 1/10W | (640D/740D) |
| R351 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | (640D/740D) |
| R352 | 1-249-405-11 | CARBON | 100 | 5% | 1/4W | (640D/740D) |
| R353 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R354 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R355 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R356 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W | |
| R357 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R358 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R359 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W | |
| R360 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R361 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W | |
| R362 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W | |
| R370 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R371 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R372 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R373 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R374 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R375 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R376 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R377 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R601 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R602 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R603 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R604 | 1-216-037-00 | METAL CHIP | 330 | 5% | 1/10W | |
| R605 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R606 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R607 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R608 | 1-216-037-00 | METAL CHIP | 330 | 5% | 1/10W | |
| R609 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R610 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R611 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R612 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R613 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R614 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R615 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W | |
| R616 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W | |
| R617 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W | |
| R618 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W | |
| R619 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R621 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R623 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |
| R624 | 1-216-063-00 | METAL CHIP | 3.9K | 5% | 1/10W | |
| R625 | 1-216-069-00 | METAL CHIP | 6.8K | 5% | 1/10W | |
| R626 | 1-216-095-00 | METAL CHIP | 82K | 5% | 1/10W | |
| R627 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R628 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R629 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |

| Ref.No. | Part No. | Description | | | | Remark |
|---|---|---|---|---|---|---|
| R630 | 1-216-101-00 | METAL CHIP | 150K | 5% | 1/10W | |
| R631 | 1-216-025-00 | METAL CHIP | 10Ω | 5% | 1/10W | |
| R632 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R633 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R634 | 1-216-113-00 | METAL CHIP | 470K | 5% | 1/10W | |
| R635 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R636 | 1-216-121-00 | METAL CHIP | 1M | 5% | 1/10W | |
| R637 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W | |
| R638 | 1-216-121-00 | METAL CHIP | 1M | 5% | 1/10W | |
| R639 | 1-216-043-00 | METAL CHIP | 560 | 5% | 1/10W | |
| R640 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R641 | 1-216-091-00 | METAL CHIP | 56K | 5% | 1/10W | |
| R642 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W | |
| R643 | 1-216-055-00 | METAL CHIP | 1.8K | 5% | 1/10W | |
| R644 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |
| R645 | 1-216-091-00 | METAL CHIP | 56K | 5% | 1/10W | |
| R646 | 1-216-099-00 | METAL CHIP | 120K | 5% | 1/10W | |
| R647 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W | |
| R648 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W | |
| R649 | 1-216-035-00 | METAL CHIP | 270 | 5% | 1/10W | |
| R650 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R651 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R652 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R653 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R654 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R655 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R656 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R657 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R658 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R659 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W | |
| R660 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W | |
| R661 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R665 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R666 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R667 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R668 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W | |
| R669 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W | (640D/740D) |
| R669 | 1-216-089-00 | METAL GLAZE | 47K | 5% | 1/10W | (MDP-440) |
| R670 | 1-216-651-11 | METAL CHIP | 1K | 0.5% | 1/10W | |
| R671 | 1-216-659-11 | METAL CHIP | 2.2K | 0.5% | 1/10W | |
| R672 | 1-216-667-11 | METAL CHIP | 4.7K | 0.5% | 1/10W | |
| R673 | 1-216-659-11 | METAL CHIP | 2.2K | 0.5% | 1/10W | |
| R674 | 1-216-651-11 | METAL CHIP | 1K | 0.5% | 1/10W | |
| R675 | 1-216-651-11 | METAL CHIP | 1K | 0.5% | 1/10W | |
| R676 | 1-216-625-11 | METAL CHIP | 82 | 0.5% | 1/10W | |
| R677 | 1-216-645-11 | METAL CHIP | 500 | 0.5% | 1/10W | |
| R678 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W | |
| R679 | 1-216-675-11 | METAL CHIP | 10K | 0.5% | 1/10W | |
| R680 | 1-216-697-11 | METAL CHIP | 82K | 0.5% | 1/10W | |

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| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| R681 | 1-247-731 11 | CARBON | 22 | 5% | 1/2W |
| R682 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W |
| R683 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R684 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R685 | 1-216-099-00 | METAL CHIP | 120K | 5% | 1/10W |
| R686 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W |
| R687 | 1 216 043-00 | METAL CHIP | 560 | 5% | 1/10W |
| R688 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R689 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R690 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R691 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R692 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W |
| R693 | 1 216 081-00 | METAL CHIP | 22K | 5% | 1/10W |
| R694 | 1-216-121-00 | METAL CHIP | 1M | 5% | 1/10W |
| R695 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W |
| R696 | 1 216 093-00 | METAL CHIP | 68K | 5% | 1/10W |
| R697 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W |
| R698 | 1 216 097-00 | METAL CHIP | 100K | 5% | 1/10W |
| R699 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W |
| R700 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W |
| R701 | 1-216-105-00 | METAL CHIP | 220K | 5% | 1/10W |
| R702 | 1-216-089-00 | METAL CHIP | 27K | 5% | 1/10W |
| R703 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R704 | 1-216-111-00 | METAL CHIP | 390K | 5% | 1/10W |
| R705 | 1 216 077-00 | METAL CHIP | 15K | 5% | 1/10W |
| R706 | 1-216-101-00 | METAL CHIP | 150K | 5% | 1/10W (640D/740D) |
| R706 | 1-216-105-00 | METAL GLAZE | 220K | 5% | 1/10W (MDP-440) |
| R707 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W |
| R708 | 1-216-035-00 | METAL CHIP | 270 | 5% | 1/10W |
| R709 | 1-216-096-00 | METAL GLAZE | 91K | 5% | 1/10W (640D/740D) |
| R709 | 1 216 105-00 | METAL CHIP | 220K | 5% | 1/10W |
| R710 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W |
| R711 | 1-216-111-00 | METAL CHIP | 390K | 5% | 1/10W |
| R712 | 1-216-105-00 | METAL CHIP | 220K | 5% | 1/10W |
| R713 | 1 216-071-00 | METAL CHIP | 8.2K | 5% | 1/10W (640D/740D) |
| R713 | 1-216-748 11 | METAL GLAZE | 39K | 5% | 1/10W (MDP-440) |
| R714 | 1-216-095-00 | METAL CHIP | 82K | 5% | 1/10W |
| R715 | 1-216-099-00 | METAL CHIP | 120K | 5% | 1/10W |
| R716 | 1-216-111-00 | METAL CHIP | 390K | 5% | 1/10W |
| R717 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W |
| R718 | 1 216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R719 | 1-216 041-00 | METAL CHIP | 470 | 5% | 1/10W |
| R720 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W |
| R721 | 1-216-043-00 | METAL CHIP | 560 | 5% | 1/10W |
| R722 | 1-216 045 00 | METAL CHIP | 680 | 5% | 1/10W |
| R723 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R724 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R725 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| R726 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R727 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R728 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W |
| R729 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R731 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W |
| R732 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W |
| R733 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W |
| R734 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W |
| R735 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |
| R736 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |
| R737 | 1 216-065 00 | METAL CHIP | 4.7K | 5% | 1/10W |
| R738 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |
| R739 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W |
| R740 | 1-216-021-00 | METAL CHIP | 68 | 5% | 1/10W |
| ⚠R741 | 1-212-950-00 | FUSIBLE | 4.7 | 5% | 1/2W F |
| R742 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W |
| R743 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W |
| R744 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W |
| R745 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W |
| R746 | 1-216 101 00 | METAL CHIP | 150K | 5% | 1/10W |
| R747 | 1-216 675-11 | METAL CHIP | 10K | 0.5% | 1/10W |
| R748 | 1-216-683-11 | METAL CHIP | 22K | 0.5% | 1/10W |
| R749 | 1-216-071-00 | METAL CHIP | 8.2K | 5% | 1/10W |
| R750 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W |
| R751 | 1-216-113-00 | METAL CHIP | 470K | 5% | 1/10W |
| R752 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W |
| R753 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W |
| R754 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R755 | 1-216-061 00 | METAL CHIP | 3.3K | 5% | 1/10W |
| R756 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R757 | 1 216-073-00 | METAL CHIP | 10K | 5% | 1/10W (640D/740D) |
| R760 | 1-216 047 00 | METAL CHIP | 820 | 5% | 1/10W |
| R761 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W |
| R762 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R766 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R801 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R802 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R803 | 1 216 065 00 | METAL CHIP | 4.7K | 5% | 1/10W |
| R804 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R805 | 1-216 073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R806 | 1 216 099 00 | METAL CHIP | 120K | 5% | 1/10W |
| R807 | 1-216-101-00 | METAL CHIP | 150K | 5% | 1/10W |
| R808 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W |
| R809 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R810 | 1-216-093-00 | METAL CHIP | 68K | 5% | 1/10W |
| R811 | 1-216-121-00 | METAL CHIP | 1M | 5% | 1/10W |
| R812 | 1-216-061 00 | METAL CHIP | 3.3K | 5% | 1/10W |
| R813 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R814 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

| Ref.No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| R815 | 1-216-003-00 | METAL CHIP | 68K | 5% | 1/10W |
| R816 | 1-216-002-00 | METAL CHIP | 3.6K | 5% | 1/10W |
| R817 | 1-216-093-00 | METAL CHIP | 68K | 5% | 1/10W |
| R818 | 1-216-099-00 | METAL CHIP | 120K | 5% | 1/10W |
| R819 | 1-216-099-00 | METAL CHIP | 120K | 5% | 1/10W |
| R820 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W |
| R821 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W |
| R822 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W |
| R823 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W |
| R825 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W |
| R826 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W |
| R827 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W |
| R828 | 1-216-334-11 | METAL GLAZE | 22K | 1% | 1/10W |
| R829 | 1-216-334-11 | METAL GLAZE | 22K | 1% | 1/10W |
| R830 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R831 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W |
| R832 | 1-216-092-00 | METAL CHIP | 100K | 5% | 1/10W |
| R833 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R834 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W |
| R835 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W |
| R836 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W |
| R840 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R841 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R842 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R844 | 1-216-025-00 | METAL CHIP | 100 | 5% | 1/10W |
| R845 | 1-216-025-00 | METAL CHIP | 100 | 5% | 1/10W |
| R846 | 1-216-025-00 | METAL CHIP | 100 | 5% | 1/10W |
| R847 | 1-216-025-00 | METAL CHIP | 100 | 5% | 1/10W |
| R848 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R849 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R850 | 1-216-121-00 | METAL CHIP | 1M | 5% | 1/10W |
| R851 | 1-216-099-00 | METAL CHIP | 120K | 5% | 1/10W |
| R861 | 1-216-025-00 | METAL CHIP | 100 | 5% | 1/10W |
| R862 | 1-216-025-00 | METAL CHIP | 100 | 5% | 1/10W |
| R863 | 1-216-025-00 | METAL CHIP | 100 | 5% | 1/10W |
| R864 | 1-216-025-00 | METAL CHIP | 100 | 5% | 1/10W |
| R865 | 1-216-025-00 | METAL CHIP | 100 | 5% | 1/10W |
| R868 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R901 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R903 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R909 | 1-259-178-21 | CARBON | 3K | 1% | 1/4W |
| R910 | 1-259-171-21 | CARBON | 1.5K | 5% | 1/4W |
| R911 | 1-259-171-21 | CARBON | 1.5K | 5% | 1/4W |
| R912 | 1-259-223-21 | CARBON | 220K | 5% | 1/4W |
| R913 | 1-259-178-21 | CARBON | 3K | 1% | 1/4W |
| R914 | 1-259-171-21 | CARBON | 1.5K | 5% | 1/4W |
| R915 | 1-259-171-21 | CARBON | 1.5K | 5% | 1/4W |
| R916 | 1-259-223-21 | CARBON | 220K | 5% | 1/4W |
| R917 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |

| Ref.No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| ⚠R920 | 1-212-950-00 | FUSIBLE | 4.7 | 5% | 1/2W F |
| ⚠R921 | 1-212-950-00 | FUSIBLE | 4.7 | 5% | 1/2W F |
| R922 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R924 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W |
| R925 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W |
| R926 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |
| R927 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |
| R928 | 1-259-151-21 | CARBON | 220 | 5% | 1/4W |
| R929 | 1-259-151-21 | CARBON | 220 | 5% | 1/4W |
| R930 | 1-259-215-21 | CARBON | 100K | 5% | 1/4W |
| R931 | 1-259-215-21 | CARBON | 100K | 5% | 1/4W |
| R932 | 1-259-167-21 | CARBON | 1K | 5% | 1/4W |
| R933 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W |
| R934 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W |
| R935 | 1-259-167-21 | CARBON | 1K | 5% | 1/4W |
| R936 | 1-216-060-00 | METAL GLAZE | 3K | 5% | 1/10W |
| R937 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R938 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R939 | 1-259-191-21 | CARBON | 10K | 5% | 1/4W |
| R940 | 1-259-191-21 | CARBON | 10K | 5% | 1/4W |
| R941 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R942 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R945 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W |
| R946 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R947 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R951 | 1-216-025-00 | METAL CHIP | 100 | 5% | 1/10W |
| R952 | 1-216-025-00 | METAL CHIP | 100 | 5% | 1/10W |
| R953 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R954 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |

< VARIABLE RESISTOR >

| | | | |
|---|---|---|---|
| RV101 | 1-228-989-00 | RES, ADJ, METAL | 470 |
| RV102 | 1-228-989-00 | RES, ADJ, METAL | 470 |
| RV103 | 1-228-993-00 | RES, ADJ, METAL | 4.7K |
| RV104 | 1-228-994-00 | RES, ADJ, METAL | 10K |
| RV105 | 1-228-993-00 | RES, ADJ, METAL | 4.7K |
| RV106 | 1-228-998-00 | RES, ADJ, METAL | 220K |
| RV107 | 1-228-994-00 | RES, ADJ, METAL | 10K |
| RV108 | 1-228-994-00 | RES, ADJ, METAL | 10K |
| RV901 | 1-228-993-00 | RES, ADJ, METAL | 4.7K |

< RELAY >

| | | |
|---|---|---|
| RY801 | 1-515-622-11 | RELAY |

< SWITCH >

| | | |
|---|---|---|
| S601 | | SWITCH (AUTO REPEAT) |

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

**MP-31** **MT-28** **MT-30** **PS-193**

| Ref.No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| | | < VIBRATOR > | | | |
| X101 | 1 567 652 11 | VIBRATOR, CRYSTAL (13.3MHz) | | | |
| X601 | 1-567-733-11 | VIBRATOR, CRYSTAL (17.734475MHz) | | | |
| X602 | 1-567-900-11 | OSCILLATOR, CRYSTAL (14.31818MHz) | | | |
| X801 | 1-567-515-11 | VIBRATOR, VARIABLE CRYSTAL (16.9MHz) | | | |
| ********** | | | | | |
| * | 1-630-095-11 | MT-28 BOARD | | | |
| | | ********** | | | |
| ********** | | | | | |
| * | 1-631-095-11 | MT-30 BOARD | | | |
| | | ********** | | | |
| ********** | | | | | |
| * | A-8421-372-A | PS-193 BOARD, COMPLETE | | | |
| | | ********** | | | |
| * | 1-533-189-11 | HOLDER, FUSE | | | |
| | | < CAPACITOR > | | | |
| C101 | 1-125-298-00 | ELECT | 1000uF | 20% | 25V |
| C102 | 1-124-314-00 | ELECT | 4700uF | 20% | 25V |
| C103 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V |
| C104 | 1-163-040-11 | CERAMIC CHIP | 0.0012uF | 10% | 50V |
| C105 | 1-163-989-11 | CERAMIC CHIP | 0.033uF | 10% | 25V |
| C106 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C107 | 1-124-471-00 | ELECT | 1000uF | 20% | 6.3V |
| C108 | 1-124-903-11 | ELECT | 1uF | 20% | 50V |
| C109 | 1-124-472-11 | ELECT | 470uF | 20% | 10 |
| C110 | 1-163-833-00 | CERAMIC CHIP | 0.068uF | | 25V |
| C111 | 1-163-037-11 | CERAMIC CHIP | 680PF | 10% | 50V |
| C112 | 1-163-019-00 | CERAMIC CHIP | 0.0068uF | 10% | 50V |
| C114 | 1-126-101-11 | ELECT | 100uF | 20% | 16V |
| C115 | 1-163-037-11 | CERAMIC CHIP | 0.022uF | 10% | 25V |
| C116 | 1-163-833-00 | CERAMIC CHIP | 0.068uF | | 25V |
| C119 | 1-126-176-11 | ELECT | 220uF | 20% | 10V |
| C120 | 1-126-096-11 | ELECT | 1DuF | 20% | 35V |
| C201 | 1-163 009-11 | CERAMIC CHIP | 0.001uF | 10% | 50V |
| C202 | 1-163-019-00 | CERAMIC CHIP | 0.0068uF | 10% | 50V |
| C203 | 1-163-009-11 | CERAMIC CHIP | 0.001uF | 10% | 50V |
| C204 | 1-163-009-11 | CERAMIC CHIP | 0.001uF | 10% | 50V |
| C205 | 1 163-017-00 | CERAMIC CHIP | 0.0047uF | 5% | 50V |
| C206 | 1 163 007 11 | CERAMIC CHIP | 680PF | 10% | 50V |
| C208 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C209 | 1-163-017-00 | CERAMIC CHIP | 0.0047uF | 5% | 50V |
| C210 | 1-163-007-11 | CERAMIC CHIP | 680PF | 10% | 50V |
| C211 | 1-163-017-00 | CERAMIC CHIP | 0.0047uF | 5% | 50V |
| C212 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |

| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| | | < CONNECTOR > | |
| * CN002 | 1-564-419-11 | HEADER, SPRING (POWER) 2P | |
| * CN003 | 1-560-890-00 | PIN, CONNECTOR 2P | |
| * CN201 | 1-560 891 00 | PIN, CONNECTOR 3P | |
| | | < FUSE > | |
| ⚠F101 | 1-532-299-11 | FUSE, TIME LAG (250V T5A) | |
| ⚠F102 | 1-532-299-11 | FUSE, TIME-LAG (250V T5A) | |
| ⚠F301 | 1-532-078-11 | FUSE, TIME-LAG (250V T1A) | |
| | | < DIODE > | |
| ⚠D101 | 8-719-508-55 | DIODE D3SBA10 | |
| D105 | 8-719-980-78 | DIODE ERA81-006 | |
| D106 | 8-719-110-31 | DIODE HD12ES-B2 | |
| D108 | 8-719-105-82 | DIODE RD5.1M B2 | |
| D201 | 8-719-980-78 | DIODE ERA81-006 | |
| D202 | 8-719-980-78 | DIODE ERA81-006 | |
| D203 | 8-719-200-02 | DIODE 1DE2 | |
| D204 | 8 719 200 02 | DIODE 1DE2 | |
| D205 | 8-719-911-19 | DIODE 1SS119 | |
| D206 | 8-719-911-19 | DIODE 1SS119 | |
| D207 | 8-719-911-19 | DIODE 1SS119 | |
| | | < IC > | |
| IC101 | 8-759-971-39 | IC BA8700AF | |
| IC102 | | IC | |
| IC201 | 8-759-100-97 | IC uPC339G2 | |
| IC202 | 8-759-100-96 | IC uPC4558G2 | |
| | | < JUMPER RESISTOR > | |
| JR001 | 1-216-295-00 | METAL CHIP 0 5% | 1/10W |
| JR005 | 1-216-295 00 | METAL CHIP 0 5% | 1/10W |
| | | < COIL > | |
| L101 | 1-424-219-11 | COIL, CHOKE 300uH | |
| L102 | 1-410 339-11 | COIL, CHOKE 10uH | |
| L201 | 1-424-219-11 | COIL, CHOKE 300uH | |
| | | < IC LINK > | |
| ⚠PS001 | 1-532-637-00 | LINK, IC 1.0A | |
| ⚠PS002 | 1 532 675 00 | LINK, IC 1.5A | |
| ⚠PS003 | 1-532-675-00 | LINK, IC 1.5A | |
| ⚠PS004 | 1-532-637-00 | LINK, IC 1.0A | |

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| | | < TRANSISTOR > | | | |
| Q101 | 8 729 119-78 | TRANSISTOR | 2SC2785-HFE | | |
| Q102 | 8-729-216 22 | TRANSISTOR | 2SA1162 | | |
| Q103 | 8-729-113-31 | TRANSISTOR | 2SB733-2 | | |
| ⚠Q105 | 8-729-141-75 | TRANSISTOR | 2SD596DV345 | | |
| Q201 | 8 729 117-11 | TRANSISTOR | 2SB1151 | | |
| Q202 | 8-729-143-30 | TRANSISTOR | 2SD1691K | | |
| Q203 | 8-729-117-11 | TRANSISTOR | 2SB1151 | | |
| Q204 | 8-729-143-30 | TRANSISTOR | 2SD1691K | | |
| Q205 | 8-729-119-78 | TRANSISTOR | 2SC2785-HFE | | |
| Q206 | 8-729-216 22 | TRANSISTOR | 2SA1162 | | |
| Q208 | 8-729-900-53 | TRANSISTOR | DTC114EK | | |
| Q209 | 8-729-901-04 | TRANSISTOR | DTA114EK | | |
| Q210 | 8-729-100-67 | TRANSISTOR | 2SC1623-L7 | | |
| Q211 | 8 729 119-76 | TRANSISTOR | 2SA1175-HFE | | |
| Q212 | 8-729-901 04 | TRANSISTOR | DTA114EK | | |
| | | < RESISTOR > | | | |
| R002 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| R003 | 1-216-296 00 | METAL CHIP | 0 | 5% | 1/8W |
| R004 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| R101 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R102 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R103 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W |
| R104 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |
| R105 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R106 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W |
| R107 | 1-216 067-00 | METAL CHIP | 5.6K | 5% | 1/10W |
| R108 | 1-216-043-00 | METAL CHIP | 56D | 5% | 1/10W |
| R109 | 1-216-687-11 | METAL CHIP | 33K | 0.5% | 1/10W |
| R110 | 1-216-676-11 | METAL CHIP | 11K | 0.5% | 1/10W |
| R112 | 1-216-099 00 | METAL CHIP | 120K | 5% | 1/10W |
| R114 | 1-216-097 00 | METAL CHIP | 100K | 5% | 1/10W |
| ⚠R115 | 1-207-679-00 | WIREWOUND | 15 | 10% | 5W F |
| R116 | 1 216 049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R117 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R129 | 1-216-192-00 | METAL CHIP | 56D | 5% | 1/8W |
| R201 | 1 216 081-00 | METAL CHIP | 22K | 5% | 1/10W |
| R202 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W |
| R203 | 1-216-093-00 | METAL CHIP | 68K | 5% | 1/10W |
| R204 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |
| R205 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W |
| R206 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W |
| R207 | 1 216 073 00 | METAL CHIP | 10K | 5% | 1/10W |
| R208 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R209 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R210 | 1-216-105-00 | METAL CHIP | 220K | 5% | 1/10W |
| R211 | 1-216 073-00 | METAL CHIP | 10K | 5% | 1/10W |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| R212 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |
| R213 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R214 | 1-247-750-11 | CARBON | 680 | 5% | 1/2W |
| R215 | 1 247-750-11 | CARBON | 680 | 5% | 1/2W |
| R216 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| ⚠R217 | 1-216-369-00 | METAL OXIDE | 1 | 5% | 2W F |
| R218 | 1-216-690-11 | METAL CHIP | 43K | 0.5% | 1/10W |
| R219 | 1-216-675-11 | METAL CHIP | 10K | 0.5% | 1/10W |
| R220 | 1-216-690-11 | METAL CHIP | 43K | 0.5% | 1/10W |
| R221 | 1-216-675-11 | METAL CHIP | 10K | 0.5% | 1/10W |
| R222 | 1 216 073 00 | METAL CHIP | 10K | 5% | 1/10W |
| R223 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| ⚠R224 | 1-215-866-11 | METAL OXIDE | 33D | 5% | 1W F |
| R225 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R226 | 1-247-750-11 | CARBON | 680 | 5% | 1/2W |
| R227 | 1-216-073 00 | METAL CHIP | 10K | 5% | 1/10W |
| R228 | 1-216-093-00 | METAL CHIP | 68K | 5% | 1/10W |
| R230 | 1-216-105-00 | METAL CHIP | 220K | 5% | 1/10W |
| R231 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| | | < SWITCH > | | | |
| ⚠SW301 | 1-570-156-11 | SWITCH, PUSH (AC POWER) (1 KEY) | | | |
| | | < FILTER > | | | |
| ⚠T301 | 1-421-771-11 | FILTER, LINE | | | |
| | | ********** | | | |
| * | A-6421-502-A | RG-23 BOARD, COMPLETE (MDP-640D/740D) | | | |
| | | ********** | | | |
| | | < CAPACITOR > | | | |
| C101 | 1-124-589-11 | ELECT | 47uF | 20% | 16V |
| C102 | 1-126-157-11 | ELECT | 10uF | 20% | 16V |
| C103 | 1-163-117-00 | CERAMIC CHIP | 100PF | 5% | 50V |
| C104 | 1-163-035 00 | CERAMIC CHIP | 0.047uF | | 50V |
| C105 | 1-126-157-11 | ELECT | 10uF | 20% | 16V |
| C106 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C107 | 1-126-154-11 | ELECT | 47uF | 20% | 6.3V |
| C108 | 1-124-604-00 | ELECT | 330uF | 20% | 10V |
| C109 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V |
| C110 | 1-126-154-11 | ELECT | 47uF | 20% | 6.3V |
| C111 | 1-126-157-11 | ELECT | 10uF | 20% | 16V |
| C112 | 1-163-117-00 | CERAMIC CHIP | 100PF | 5% | 50V |
| C113 | 1-163-113-00 | CERAMIC CHIP | 68PF | 5% | 50V |
| C114 | 1-126-157-11 | ELECT | 10uF | 20% | 16V |
| C115 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C116 | 1-124-589-11 | ELECT | 47uF | 20% | 16V |
| C117 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

## RG-23

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C118 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C119 | 1-130-491-00 | MYLAR | 0.047uF | 5% | 50V |
| C120 | 1-130-491-00 | MYLAR | 0.047uF | 5% | 50V |
| C121 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C122 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C123 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C124 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C125 | 1-126-157-11 | ELECT | 10uF | 20% | 16V |
| C126 | 1-126-157-11 | ELECT | 10uF | 20% | 16V |
| C127 | 1-126-157-11 | ELECT | 10uF | 20% | 16V |
| C128 | 1-126-157-11 | ELECT | 10uF | 20% | 16V |
| C129 | 1-126-157-11 | ELECT | 10uF | 20% | 16V |
| C130 | 1-126-154-11 | ELECT | 47uF | 20% | 6.3V |
| C131 | 1-124-465-00 | ELECT | 0.47uF | 20% | 50V |
| C132 | 1-126-177-11 | ELECT | 100uF | 20% | 10V |
| C133 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V |
| C134 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C135 | 1-130-489-00 | MYLAR | 0.033uF | 5% | 50V |
| C136 | 1-126-301-11 | ELECT | 1uF | 20% | 50V |
| C137 | 1-163-035-00 | CERAMIC CHIP | 0.047uF | | 50V |
| C138 | 1-163-038-00 | CERAMIC CHIP | 0.1uF | | 25V |
| C139 | 1-163-227-11 | CERAMIC CHIP | 10PF | 5% | 50V |
| C140 | 1-163-229-11 | CERAMIC CHIP | 12PF | 5% | 50V |
| C141 | 1-163-001-00 | CERAMIC CHIP | 8PF | | 50V |
| C142 | 1-124-472-11 | ELECT | 470uF | 20% | 10V |
| C143 | 1-126-177-11 | ELECT | 100uF | 20% | 10V |
| C144 | 1-163-037-00 | CERAMIC CHIP | 15PF | 5% | 50V |
| C145 | 1-163-103-00 | CERAMIC CHIP | 27PF | 5% | 50V |
| C146 | 1-126-154-11 | ELECT | 47uF | 20% | 6.3V |
| C147 | 1-126-154-11 | ELECT | 47uF | 20% | 6.3V |
| C148 | 1-126-154-11 | ELECT | 47uF | 20% | 6.3V |

< CONNECTOR >

| | | | |
|---|---|---|---|
| * CN101 | 1-506-709-11 | CONNECTOR, BOARD TO BOARD 12P | |

< TRIMMER >

| | | | |
|---|---|---|---|
| CV101 | 1-141-304-21 | CAP, TRIMMER 10PF | |
| CV102 | 1-141-227-00 | CAP, TRIMMER 20PF | |

< DIODE >

| | | | |
|---|---|---|---|
| D101 | 8-719-911-19 | DIODE | 1SS119 |
| D102 | 8-719-911-19 | DIODE | 1SS119 |
| D103 | 8-719-911-19 | DIODE | 1SS119 |
| D104 | 8-719-911-19 | DIODE | 1SS119 |

< DELAY LINE >

| | | | |
|---|---|---|---|
| DL101 | 1-415-422-31 | DELAY LINE, 1H (PAL) | |
| DL102 | 1-415-640-11 | DELAY LINE, 1C | |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| | | < FILTER > | | | |
| FL101 | 1-235-753-21 | YC MODULE | | | |
| FL102 | 1-235-896-11 | FILTER, BAND PASS | | | |
| | | < IC > | | | |
| IC101 | 8-752-006-12 | IC CX20061 | | | |
| IC102 | 8-752-006-12 | IC CX20061 | | | |
| IC103 | 8-752-030-75 | IC V702D | | | |
| IC104 | 8-759-011-65 | IC MC74HC4053F | | | |
| IC105 | 1-464-832-21 | IC FILTER BLOCK, COM (CFB-3) | | | |
| | | < JUMPER RESISTOR > | | | |
| JR104 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| | | < COIL > | | | |
| L101 | 1-408-407-00 | INDUCTOR 6.8uH | | | |
| L103 | 1-408-609-41 | INDUCTOR 33uH | | | |
| L104 | 1-408-407-00 | INDUCTOR 6.8uH | | | |
| L105 | 1-408-609-41 | INDUCTOR 33uH | | | |
| | | < VARIABLE COIL > | | | |
| LV101 | 1-415-051-11 | COIL (DELAY ADJUSTMENT) | | | |
| | | < TRANSISTOR > | | | |
| Q101 | 8-729-100-66 | TRANSISTOR | 2SC1623 | | |
| Q102 | 8-729-100-66 | TRANSISTOR | 2SC1623 | | |
| Q103 | 8-729-100-66 | TRANSISTOR | 2SC1623 | | |
| Q104 | 8-729-100-66 | TRANSISTOR | 2SC1623 | | |
| Q105 | 8-729-100-66 | TRANSISTOR | 2SC1623 | | |
| Q106 | 8-729-100-66 | TRANSISTOR | 2SC1623 | | |
| Q107 | 8-729-100-66 | TRANSISTOR | 2SC1623 | | |
| Q108 | 8-729-216-22 | TRANSISTOR | 2SA1162 | | |
| Q109 | 8-729-100-66 | TRANSISTOR | 2SC1623 | | |
| Q110 | 8-729-100-66 | TRANSISTOR | 2SC1623 | | |
| Q111 | 8-729-901-06 | TRANSISTOR | DTA144EK | | |
| Q112 | 8-729-901-01 | TRANSISTOR | DTC144EK | | |
| Q113 | 8-729-901-01 | TRANSISTOR | DTC144EK | | |
| Q114 | 8-729-100-66 | TRANSISTOR | 2SC1623 | | |
| Q115 | 8-729-216-22 | TRANSISTOR | 2SA1162 | | |
| Q116 | 8-729-100-66 | TRANSISTOR | 2SC1623 | | |
| Q117 | 8-729-100-66 | TRANSISTOR | 2SC1623 | | |
| Q118 | 8-729-216-22 | TRANSISTOR | 2SA1162 | | |
| Q119 | 8-729-100-66 | TRANSISTOR | 2SC1623 | | |
| Q120 | 8-729-100-66 | TRANSISTOR | 2SC1623 | | |
| Q121 | 8-729-216-22 | TRANSISTOR | 2SA1162 | | |
| Q122 | 8-729-100-66 | TRANSISTOR | 2SC1623 | | |
| Q123 | 8-729-901-01 | TRANSISTOR | DTC144EK | | |
| Q124 | 8-729-100-66 | TRANSISTOR | 2SC1623 | | |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| Q125 | 8-729-100-66 | TRANSISTOR | 2SC1623 | | |
| Q126 | 8-729-100-66 | TRANSISTOR | 2SC1623 | | |
| | | < RESISTOR > | | | |
| R101 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R102 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W |
| R103 | 1-216-063-00 | METAL CHIP | 3.9K | 5% | 1/10W |
| R104 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W |
| R105 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W |
| R106 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R107 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R108 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R109 | 1-216-039-00 | METAL CHIP | 390 | 5% | 1/10W |
| R110 | 1-216-055-00 | METAL CHIP | 1.8K | 5% | 1/10W |
| R111 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R112 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R113 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W |
| R114 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R115 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R116 | 1-216-055-00 | METAL CHIP | 1.8K | 5% | 1/10W |
| R117 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R118 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W |
| R119 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W |
| R120 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W |
| R121 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R122 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R123 | 1-216-047-00 | METAL CHIP | 820 | 5% | 1/10W |
| R124 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R125 | 1-216-047-00 | METAL CHIP | 820 | 5% | 1/10W |
| R126 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |
| R127 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W |
| R128 | 1-216-045-00 | METAL CHIP | 680 | 5% | 1/10W |
| R129 | 1-216-047-00 | METAL CHIP | 820 | 5% | 1/10W |
| R130 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R131 | 1-216-071-00 | METAL CHIP | 8.2K | 5% | 1/10W |
| R132 | 1-216-059-00 | METAL CHIP | 2.7K | 5% | 1/10W |
| R133 | 1-216-111-00 | METAL CHIP | 390K | 5% | 1/10W |
| R134 | 1-216-103-00 | METAL CHIP | 180K | 5% | 1/10W |
| R135 | 1-216-047-00 | METAL CHIP | 820 | 5% | 1/10W |
| R136 | 1-216-055-00 | METAL CHIP | 1.8K | 5% | 1/10W |
| R137 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W |
| R138 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W |
| R139 | 1-216-039-00 | METAL CHIP | 390 | 5% | 1/10W |
| R140 | 1-216-039-00 | METAL CHIP | 390 | 5% | 1/10W |
| R141 | 1-216-047-00 | METAL CHIP | 820 | 5% | 1/10W |
| R142 | 1-216-047-00 | METAL CHIP | 820 | 5% | 1/10W |
| R143 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R144 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W |
| R145 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| R146 | 1-216-083-00 | METAL CHIP | 27K | 5% | 1/10W |
| R147 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W |
| R148 | 1-249-411-11 | CARBON | 330 | 5% | 1/4W |
| R149 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W |
| R150 | 1-216-083-00 | METAL CHIP | 27K | 5% | 1/10W |
| R151 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W |
| R152 | 1-216-083-00 | METAL CHIP | 27K | 5% | 1/10W |
| R153 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W |
| R154 | 1-216-083-00 | METAL CHIP | 27K | 5% | 1/10W |
| R155 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W |
| R156 | 1-249-411-11 | CARBON | 330 | 5% | 1/4W |
| R157 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W |
| R158 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |
| R159 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W |
| R160 | 1-216-083-00 | METAL CHIP | 27K | 5% | 1/10W |
| R161 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W |
| R162 | 1-249-409-11 | CARBON | 220 | 5% | 1/4W |
| R163 | 1-216-021-00 | METAL CHIP | 68 | 5% | 1/10W |
| R164 | 1-216-021-00 | METAL CHIP | 68 | 5% | 1/10W |
| R165 | 1-216-021-00 | METAL CHIP | 68 | 5% | 1/10W |
| R166 | 1-216-045-00 | METAL CHIP | 680 | 5% | 1/10W |
| R167 | 1-216-079-00 | METAL CHIP | 18K | 5% | 1/10W |
| R168 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W |
| R169 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W |
| R170 | 1-216-055-00 | METAL CHIP | 1.8K | 5% | 1/10W |
| R171 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W |
| R172 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W |
| R173 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R174 | 1-216-055-00 | METAL CHIP | 1.8K | 5% | 1/10W |
| R175 | 1-216-043-00 | METAL CHIP | 560 | 5% | 1/10W |
| R176 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W |
| R177 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W |
| R178 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W |
| R179 | 1-216-055-00 | METAL CHIP | 1.8K | 5% | 1/10W |
| ⚠R180 | 1-212-863-00 | FUSIBLE | 18 | 5% | 1/4W F |
| R181 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W |
| R182 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R183 | 1-216-053-00 | METAL CHIP | 1.5K | 5% | 1/10W |
| R184 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W |
| R185 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W |
| R186 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W |
| R187 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W |
| R188 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R189 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| R190 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R191 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R192 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W |
| R193 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R194 | 1-216-023-00 | METAL CHIP | 82 | 5% | 1/10W |

The components identified by mark ⚠ or dotted line with mark. ⚠ are critical for safety. Replace only with part number specified.

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| | | < VARIABLE RESISTOR > | | | |
| RV101 | 1-228-991-00 | RES, ADJ, METAL 2.2K | | | |
| RV102 | 1-228-989-00 | RES, ADJ, METAL 47D | | | |
| RV103 | 1-228-991-00 | RES, ADJ, METAL 2.2K | | | |
| RV104 | 1-228-991-00 | RES, ADJ, METAL 2.2K | | | |
| RV105 | 1-228-991-00 | RES, ADJ, METAL 2.2K | | | |
| RV106 | 1-228-991-00 | RES, ADJ, METAL 2.2K | | | |
| RV107 | 1-228-994-00 | RES, ADJ, METAL 10K | | | |
| RV108 | 1-228-989-00 | RES, ADJ, METAL 47D | | | |
| RV109 | 1-228-990-00 | RES, ADJ, METAL 1K | | | |
| RV110 | 1-228-989-00 | RES, ADJ, METAL 47D | | | |
| RV111 | 1-228-989-00 | RES, ADJ, METAL 47D | | | |
| | | < CRYSTAL > | | | |
| X101 | 1-567-504-11 | OSCILLATOR, CRYSTAL (4.43MHz) | | | |
| X102 | 1-567-505-11 | OSCILLATOR, CRYSTAL (3.58MHz) | | | |
| • | A-6421-311-A | SV-33 BOARD, COMPLETE | | | |
| | | < CAPACITOR > | | | |
| C101 | 1-163-109-00 | CERAMIC CHIP | 47PF | 5% | 50V |
| C102 | 1-163-093-00 | CERAMIC CHIP | 10PF | 5% | 50V |
| C103 | 1-124-584-00 | ELECT | 100uF | 20% | 10V |
| C104 | 1-124-584-00 | ELECT | 100uF | 20% | 10V |
| C106 | 1-126-160-11 | ELECT | 1uF | 20% | 50V |
| C121 | 1-124-242-00 | ELECT | 33uF | 20% | 25V |
| C122 | 1-124-242-00 | ELECT | 33uF | 20% | 25V |
| C123 | 1-124-584-00 | ELECT | 100uF | 20% | 10V |
| C124 | 1-124-584-00 | ELECT | 100uF | 20% | 10V |
| C125 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C126 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C128 | 1-161-494-00 | CERAMIC | 0.022uF | | 25V |
| C129 | 1-136-173-00 | FILM | 0.47uF | 5% | 50V |
| C130 | 1-126-320-11 | ELECT, NONPOLAR | 10uF | 20% | 16V |
| C132 | 1-130-487-00 | MYLAR | 0.022uF | 5% | 50V |
| C133 | 1-130-476-00 | MYLAR | 0.0027uF | 5% | 50V |
| C135 | 1-130-486-00 | MYLAR | 0.018uF | 10% | 50V |
| C136 | 1-136-169-00 | FILM | 0.22uF | 5% | 50V |
| C137 | 1-130-484-00 | MYLAR | 0.012uF | 5% | 50V |
| C138 | 1-130-484-00 | MYLAR | 0.012uF | 5% | 50V |
| C139 | 1-124-282-00 | ELECT | 22uF | 20% | 16V |
| C140 | 1-126-320-11 | ELECT, NONPOLAR | 10uF | 20% | 16V |
| C141 | 1-130-491-00 | MYLAR | 0.047uF | 5% | 50V |
| C142 | 1-126-320-11 | ELECT, NONPOLAR | 10uF | 20% | 16V |
| C143 | 1-136-165-00 | FILM | 0.1uF | 5% | 50V |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| C144 | 1-130-478-00 | MYLAR | 0.0039uF | 5% | 50V |
| C145 | 1-130-486-00 | MYLAR | 0.018uF | 10% | 50V |
| C146 | 1-130-483-00 | MYLAR | 0.01uF | 5% | 50V |
| C147 | 1-136-169-00 | FILM | 0.22uF | 5% | 50V |
| C148 | 1-136-169-00 | FILM | 0.22uF | 5% | 50V |
| C149 | 1-163-113-00 | CERAMIC CHIP | 68PF | 5% | 50V |
| C150 | 1-163-093-00 | CERAMIC CHIP | 10PF | 5% | 50V |
| C151 | 1-163-131-00 | CERAMIC CHIP | 390PF | 5% | 50V |
| C152 | 1-163-093-00 | CERAMIC CHIP | 10PF | 5% | 50V |
| C153 | 1-163-129-00 | CERAMIC CHIP | 330PF | 5% | 50V |
| C154 | 1-163-115-00 | CERAMIC CHIP | 82PF | 5% | 50V |
| C155 | 1-130-475-00 | MYLAR | 0.0022uF | 5% | 50V |
| C157 | 1-126-160-11 | ELECT | 1uF | 20% | 50V |
| C161 | 1-136-173-00 | FILM | 0.47uF | 5% | 50V |
| C162 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C163 | 1-164-232-11 | CERAMIC CHIP | 0.01uF | | 50V |
| C164 | 1-126-160-11 | ELECT | 1uF | 20% | 50V |
| C165 | 1-163-019-00 | CERAMIC CHIP | 0.0068uF | 10% | 50V |
| C166 | 1-124-443-00 | ELECT | 100uF | 20% | 10V |
| | | < CONNECTOR > | | | |
| CN101 | 1-566-939-11 | CONNECTOR, F.P.C 24P | | | |
| CN102 | 1-563-493-11 | CONNECTOR, F.P.C 28P | | | |
| CN103 | 1-506-485-11 | CONNECTOR 6P, MALE | | | |
| CN104 | 1-506-482-11 | CONNECTOR 3P, MALE | | | |
| • CN105 | 1-566-969-11 | HOUSING, CONNECTOR (PC BOARD) 7P | | | |
| • CN106 | 1-566-968-11 | HOUSING, CONNECTOR (PC BOARD) 6P | | | |
| | | < DIODE > | | | |
| D101 | 8-719-400-18 | DIODE MA152WK | | | |
| D102 | 8-719-109-72 | DIODE MTD3.9ES B2 | | | |
| D103 | 8-719-911-19 | DIODE 1SS119 | | | |
| | | < IC > | | | |
| IC102 | 8-759-321-40 | IC M41529 | | | |
| IC103 | 8-759-981-92 | IC RC4558M | | | |
| IC104 | 8-759-981-92 | IC RC4558M | | | |
| IC106 | 8-759-300-71 | IC TC4053BF | | | |
| IC107 | 8-759-981-92 | IC RC4558M | | | |
| IC108 | 8-759-981-92 | IC RC4558M | | | |
| ⚠IC109 | 8-749-920-86 | IC STA-451C | | | |
| IC110 | 8-749-920-86 | IC STA-451C | | | |
| IC111 | 8-759-981-92 | IC RC4558M | | | |
| | | < JUMPER RESISTOR > | | | |
| JR201 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR202 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR203 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR204 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| JR205 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR206 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR207 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR208 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR209 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR210 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR211 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR212 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR214 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR215 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR216 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR217 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR221 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR222 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR223 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR224 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR225 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| JR226 | 1-216-296-00 | METAL CHIP | 0 | 5% | 1/8W |
| | | < COIL > | | | |
| L101 | 1-408-409-00 | INDUCTOR 10uH | | | |
| L102 | 1-410-509-11 | INDUCTOR 10uH | | | |
| L103 | 1-410-509-11 | INDUCTOR 10uH | | | |
| | | < TRANSISTOR > | | | |
| Q101 | 8-729-901-05 | TRANSISTOR | DTA124EK | | |
| Q102 | 8-729-901-00 | TRANSISTOR | DTC124EK | | |
| Q103 | 8-729-901-00 | TRANSISTOR | DTC124EK | | |
| Q104 | 8-729-100-66 | TRANSISTOR | 2SC1623 | | |
| Q105 | 8-729-100-66 | TRANSISTOR | 2SC1623 | | |
| Q106 | 8-729-100-66 | TRANSISTOR | 2SC1623 | | |
| Q107 | 8-729-901-00 | TRANSISTOR | DTC124EK | | |
| | | < RESISTOR > | | | |
| R101 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R102 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R103 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R104 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R105 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W |
| R106 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R107 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R108 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R109 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R110 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R111 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R112 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R113 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R114 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W |
| R115 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W |

| Ref. No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| R116 | 1-216-079-00 | METAL CHIP | 18K | 5% | 1/10W |
| R117 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W |
| R118 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W |
| R119 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W |
| R120 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R121 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W |
| R122 | 1-216-101-00 | METAL CHIP | 150K | 5% | 1/10W |
| R123 | 1-216-025-00 | METAL CHIP | 100 | 5% | 1/10W |
| R124 | 1-216-025-00 | METAL CHIP | 100 | 5% | 1/10W |
| R125 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |
| R126 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |
| R127 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W |
| R128 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W |
| R129 | 1-216-039-00 | METAL CHIP | 390 | 5% | 1/10W |
| R130 | 1-216-024-00 | METAL GLAZE | 91 | 5% | 1/10W |
| R145 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |
| R146 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |
| R147 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R148 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |
| R149 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |
| R150 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W |
| R151 | 1-216-113-00 | METAL CHIP | 470K | 5% | 1/10W |
| R152 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W |
| R153 | 1-216-113-00 | METAL CHIP | 470K | 5% | 1/10W |
| R155 | 1-216-238-00 | METAL GLAZE | 47K | 5% | 1/8W |
| R156 | 1-216-083-00 | METAL CHIP | 27K | 5% | 1/10W |
| R157 | 1-216-101-00 | METAL CHIP | 150K | 5% | 1/10W |
| R158 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W |
| R159 | 1-216-075-00 | METAL CHIP | 12K | 5% | 1/10W |
| R160 | 1-216-083-00 | METAL CHIP | 27K | 5% | 1/10W |
| R161 | 1-216-113-00 | METAL CHIP | 470K | 5% | 1/10W |
| R162 | 1-216-057-00 | METAL CHIP | 1.2K | 5% | 1/10W |
| R163 | 1-216-083-00 | METAL CHIP | 27K | 5% | 1/10W |
| R164 | 1-216-035-00 | METAL CHIP | 270 | 5% | 1/10W |
| R165 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W |
| R166 | 1-216-041-00 | METAL CHIP | 470 | 5% | 1/10W |
| R167 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R168 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R169 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R170 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R171 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R172 | 1-216-049-00 | METAL CHIP | 1K | 5% | 1/10W |
| R173 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R174 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R175 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W |
| R176 | 1-216-748-11 | METAL CHIP | 39K | 1% | 1/10W |
| R177 | 1-216-091-00 | METAL CHIP | 56K | 5% | 1/10W |
| R178 | 1-216-748-11 | METAL CHIP | 39K | 1% | 1/10W |
| R179 | 1-216-101-00 | METAL CHIP | 150K | 5% | 1/10W |

## SV-33 SW-163

| Ref.No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| R180 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W |
| R181 | 1-216-083-00 | METAL CHIP | 27K | 5% | 1/10W |
| R182 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W |
| R183 | 1-216-067-00 | METAL CHIP | 5.6K | 5% | 1/10W |
| R184 | 1-216-089-00 | METAL CHIP | 47K | 5% | 1/10W |
| R185 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W |
| R186 | 1-216-069-00 | METAL CHIP | 6.8K | 5% | 1/10W |
| R187 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W |
| R188 | 1-216-069-00 | METAL CHIP | 6.8K | 5% | 1/10W |
| R189 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W |
| R190 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W |
| R191 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W |
| R192 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |
| R193 | 1-216-105-00 | METAL CHIP | 220K | 5% | 1/10W |
| R194 | 1-216-079-00 | METAL CHIP | 18K | 5% | 1/10W |
| R195 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |
| R196 | 1-216-017-00 | METAL CHIP | 47 | 5% | 1/10W |
| R197 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W |
| R198 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |
| R199 | 1-216-017-00 | METAL CHIP | 47 | 5% | 1/10W |
| R200 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R201 | 1-216-095-00 | METAL CHIP | 82K | 5% | 1/10W |
| R202 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |
| R203 | 1-216-017-00 | METAL CHIP | 47 | 5% | 1/10W |
| R206 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W |
| R207 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W |
| R208 | 1-216-051-00 | METAL CHIP | 1.2K | 5% | 1/10W |
| R209 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |
| R210 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |
| R211 | 1-216-017-00 | METAL CHIP | 47 | 5% | 1/10W |
| ⚠R212 | 1-216-373-11 | METAL OXIDE | 2.2 | 5% | 2W F |
| ⚠R213 | 1-216-373-11 | METAL OXIDE | 2.2 | 5% | 2W F |
| R214 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |
| R215 | 1-216-083-00 | METAL CHIP | 27K | 5% | 1/10W |
| R217 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |
| R218 | 1-216-097-00 | METAL CHIP | 100K | 5% | 1/10W |
| R220 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |
| R221 | 1-216-079-00 | METAL CHIP | 18K | 5% | 1/10W |
| R222 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |
| R223 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W |
| R224 | 1-216-057-00 | METAL CHIP | 2.2K | 5% | 1/10W |
| R225 | 1-216-061-00 | METAL CHIP | 3.3K | 5% | 1/10W |
| R226 | 1-216-037-00 | METAL CHIP | 330 | 5% | 1/10W |
| R227 | 1-216-017-00 | METAL CHIP | 47 | 5% | 1/10W |
| R228 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R229 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |
| R230 | 1-216-055-00 | METAL CHIP | 1.8K | 5% | 1/10W |
| R231 | 1-216-055-00 | METAL CHIP | 1.8K | 5% | 1/10W |
| R233 | 1-216-101-00 | METAL CHIP | 150K | 5% | 1/10W |

| Ref.No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| R234 | 1-216-073-00 | METAL CHIP | 10K | 5% | 1/10W |
| R235 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |
| R236 | 1-216-081-00 | METAL CHIP | 22K | 5% | 1/10W |
| R237 | 1-216-033-00 | METAL CHIP | 220 | 5% | 1/10W |
| R238 | 1-216-037-00 | METAL CHIP | 330 | 5% | 1/10W |
| R239 | 1-216-077-00 | METAL CHIP | 15K | 5% | 1/10W |
| R240 | 1-216-065-00 | METAL CHIP | 4.7K | 5% | 1/10W |
| R241 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| R242 | 1-216-085-00 | METAL CHIP | 33K | 5% | 1/10W |
| R243 | 1-216-129-00 | METAL CHIP | 2.2M | 5% | 1/10W |

< JUMPER RESISTOR >

| | | | | | |
|---|---|---|---|---|---|
| RJ101 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| RJ102 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| RJ103 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| RJ104 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| RJ105 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| RJ106 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| RJ107 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| RJ108 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| RJ109 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| RJ110 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| RJ111 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| RJ218 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| RJ219 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |
| RJ220 | 1-216-295-00 | METAL CHIP | 0 | 5% | 1/10W |

< VARIABLE RESISTOR >

| | | | |
|---|---|---|---|
| RV101 | 1-228-993-00 | RES, ADJ, METAL | 4.7K |
| RV102 | 1-228-994-00 | RES, ADJ, METAL | 10K |
| RV103 | 1-228-994-00 | RES, ADJ, METAL | 10K |
| RV104 | 1-228-994-00 | RES, ADJ, METAL | 10K |
| RV105 | 1-228-994-00 | RES, ADJ, METAL | 10K |
| RV106 | 1-228-990-00 | RES, ADJ, METAL | 1K |
| RV107 | 1-228-990-00 | RES, ADJ, METAL | 1K |
| RV108 | 1-228-990-00 | RES, ADJ, METAL | 1K |

* 1-636-183-11 SW-163 BOARD

< CONNECTOR >

CN301 1-506-467-11 CONNECTOR 2P, MALE

< SWITCH >

S301 1-554-655-00 SWITCH, LEAF

⚠ The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

| Ref.No. | Part No. | Description | | | Remark |
|---|---|---|---|---|---|
| * | 1 630 184-11 | SW-164 BOARD | | | |
| | | ********** | | | |
| | | < CONNECTOR > | | | |
| CN401 | 1-506-481-11 | CONNECTOR 2P, MALE | | | |
| | | < RESISTOR > | | | |
| R401 | 1-249-423-11 | CARBON | 3.3K | 5% | 1/4W |
| R402 | 1-249-417-11 | CARBON | 1K | 5% | 1/4W |
| | | < SWITCH > | | | |
| S401 | 1-571-300-21 | SWITCH, ROTARY | | | |

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| | | | | | |
|---|---|---|---|---|---|
| * | 1-630-089-31 | TR-30 BOARD | | | |
| | | ********** | | | |
| | | < CAPACITOR > | | | |
| ⚠C401 | 1-136-472-11 | FILM | 0.1uF | 20% | 250V |
| C416 | 1-124 122-11 | ELECT | 100uF | 20% | 50V |
| C417 | 1-124-910 11 | ELECT | 47uF | 20% | 50V |
| C418 | 1-124-122-11 | ELECT | 100uF | 20% | 50V |
| C419 | 1-124-122-11 | ELECT | 100uF | 20% | 50V |
| C420 | 1-163-033-00 | CERAMIC CHIP | 0.022uF | | 50V |
| | | < CONNECTOR > | | | |
| CN401 | 1-506-483-21 | CONNECTOR 4P, MALE | | | |
| * CN402 | 1-564-028-00 | PIN, CONNECTOR 3P | | | |
| * CN403 | 1-564-029-00 | PIN, CONNECTOR 4P | | | |
| | | < DIODE > | | | |
| ⚠D406 | 8-719-260 02 | DIODE 10E2 | | | |
| D407 | 8-719-110-78 | DIODE RD33ES-B2 | | | |
| D408 | 8-719-110-86 | DIODE RD39ES-B2 | | | |
| D409 | 8-719-110-17 | DIODE RD10ES-B2 | | | |
| | | < TRANSISTOR > | | | |
| Q404 | 8-729-140-93 | TRANSISTOR 2SB733-5 | | | |
| | | < RESISTOR > | | | |
| ⚠R416 | 1 249 401-11 | CARBON | 47 | 5% | 1/4W |
| R417 | 1-249-416 11 | CARBON | 820 | 5% | 1/4W |
| R418 | 1-249-405-11 | CARBON | 100 | 5% | 1/4W |

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| Ref.No. | Part No. | Description | Remark |
|---|---|---|---|
| | | MISCELLANEOUS | |
| | | ********** | |
| ⚠52 | 1-555-795-00 | CORD, POWER, EURO PLUG | |
| ⚠62 | 1-449-849-11 | TRANSFORMER, POWER (T401) | |
| * 67 | 1-574-755-11 | WIRE, FLAT TYPE 28P | |
| ⚠73 | 1-532-078-00 | FUSE, TIME-LAG (T1A 250V) (F301) | |
| ⚠74 | 1-532-209-00 | FUSE, TIME-LAG (T5A 250V) (F101, F102) | |
| 118 | 8-759-245-79 | IC M5F7905 | |
| 129 | 1 161 063-00 | CERAMIC 0.1uF 10% 50V (C001) | |
| 158 | 1-554-468-00 | SWITCH, LEAF(SLED IN LIMIT LD/CD) (S903) | |
| 159 | 1-541-776-21 | MOTOR, LD SPINDLE (M901) | |
| 167 | 1-574-648-11 | CABLE, FLEXIBLE FLAT (24 CORE) | |
| 204 | 1-570-771-21 | SWITCH (SLED OUT LIMIT) (S902) | |
| 206 | 1-571-435-11 | SWITCH (SLED IN LIMIT) (S901) | |
| ⚠208 | 8-848-138-11 | DEVICE, OPTICAL KHS-130A | |

**********

ACCESSORIES & PACKING MATERIALS

**********

| | | |
|---|---|---|
| | 1-465-496-31 | REMOTE COMMANDER (RMT-333E) |
| | 3-701-630-01 | BAG, POLYETHYLENE |
| | 3-752-535-02 | INSTRUCTION |
| | 3-754 158 11 | MANUAL, INSTRUCTION (ENGLISH) |
| | 3-754-158-41 | MANUAL, INSTRUCTION (FRENCH, SPANISH, GERMAN, PORTUGUESE) |
| | 3-754-158-51 | MANUAL, INSTRUCTION (FRENCH, GERMAN, SPANISH) |
| * | 3-945-176-01 | CUSHION (UPPER) |
| * | 3 945 177-01 | CUSHION (LOWER) |
| * | 3-945-178-01 | INDIVIDUAL CARTON |

**********

## HARDWARE LIST

**********

| | | |
|---|---|---|
| #1 | 7-621-255-55 | SCREW +P 2X8 |
| #4 | 7-682-645-01 | SCREW -PS 3X4 |
| #5 | 7-685-647-79 | SCREW -BTP 3X10 TYPE2 S-S |
| #6 | 7-685-645-79 | SCREW +BVTP 3X6 TYPE2 IT-3 |
| #7 | 7-685-648-79 | SCREW +BVTP 3X12 TYPE2 IT-3 |
| #8 | 7-685-649-79 | SCREW +BVTP 3X14 TYPE2 IT-3 |
| #9 | 7-685-661 79 | SCREW +BVTP 4X12 TYPE2 SLIT |
| #10 | 7 685-870-01 | SCREW +BVTT 3X5 (S) |
| #11 | 7-685-646-79 | SCREW +BVTP 3X8 TYPE2 IT-3 |
| #12 | 7-687-233 11 | SCREW (+ PTPWH) (2.6X6) |

The components identified by mark ⚠ or dotted line with mark ⚠ are critical for safety. Replace only with part number specified.

# SECTION 7
# ELECTRICAL ADJUSTMENTS

During these adjustment, see the parts arrangement diagram relevant to the adjustment on page from 142.

## 1-1. LIST OF SERVICING JIGS

- Oscilloscope
- Color monitor TV
- Digital voltmeter
- Audio level meter
- Frequency counter
- Remote commander (RMT-333E)
- LD alignment disc { REF3P (8-597-903-01) ····PAL / REF7 (8-597-901-03) ····NTSC
- CD alignment disc YEDS-18 (3-702-101-01)
- MD adjustment cable (J-6082-059-A)

## 1-2. CAUTIONS ON ADJUSTMENT

- Disc load/unload operation must not be performed when servicing with the unit laying down sideways. (Never press the OPEN and CLOSE buttons.)
- When laying the unit down sideways, perform adjustment with the left side down and turn the power on.
- When adjusting the servo system, be sure to set up the unit horizontally.

## 1-3. MD ADJUSTMENT CABLE (J-6082-059-A)

MD adjustment cable is used to adjust the servo system with connecting to the SV-33 board. Remove it except when adjusting the servo system.

MD adjustment cable

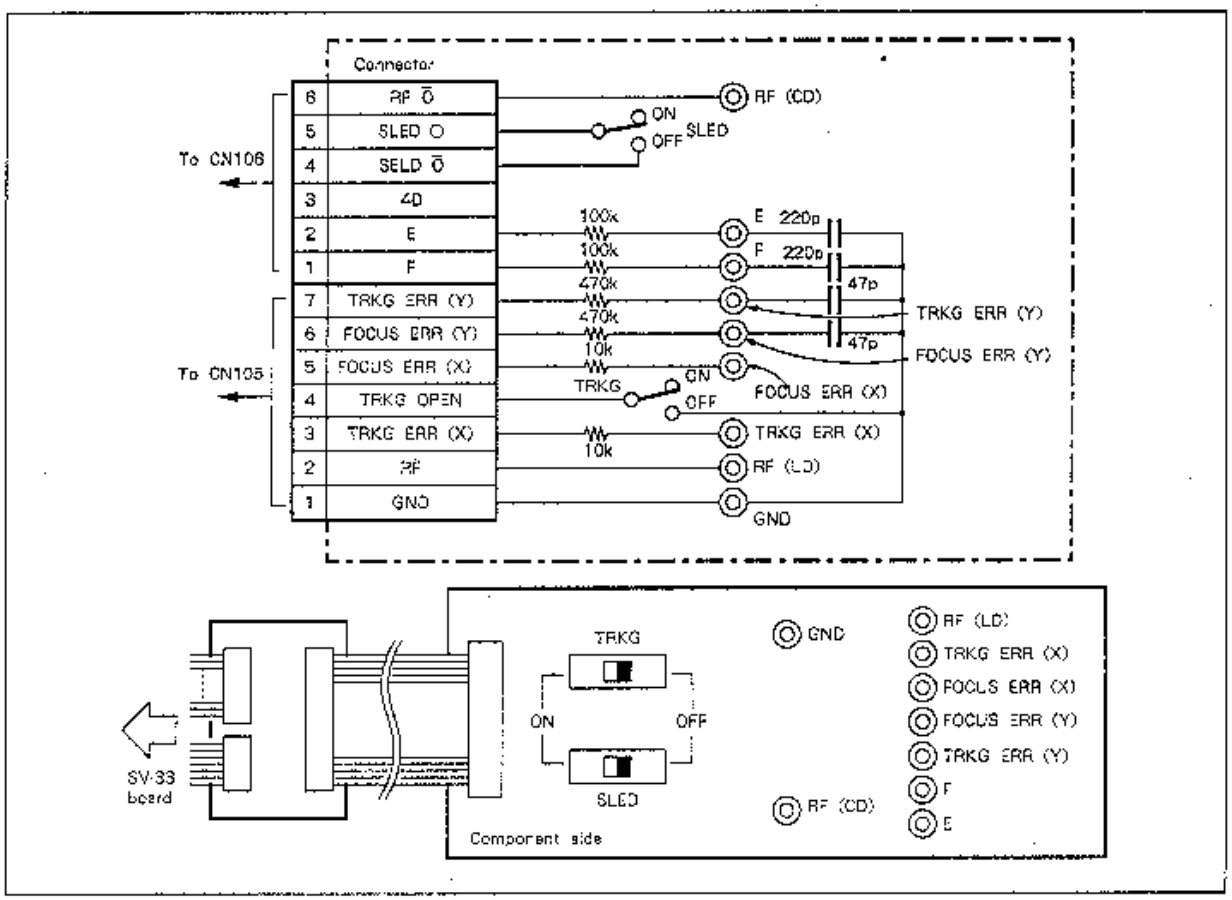



Fig. 7-1.

### 1-4. POWER SUPPLY CHECK (PS-193 BOARD)

| | |
|---|---|
| Mode | Stop |
| Measuring Equipment | Digital voltmeter |
| UN REG +16V check | |
| Measurement Point | Pin ① of W002 (Pin ②, GND) |
| Specified Value | 14.5±1V |
| UN REG −16V check | |
| Measurement Point | Pin ③ of W002 (Pin ②, GND) |
| Specified Value | −14.5±1V |
| REG +5V check | |
| Measurement Point | Pin ⑥ of W002 (Pin ⑤, GND) |
| Specified Value | 5.1±0.2V |
| REG −5V check | |
| Measurement Point | Pin ⑦ of W002 (Pin ⑤, GND) |
| Specified Value | −5±0.5V |

- Confirm that the power supply voltages satisfy the respective specified values.

### 1-5. SYSTEM CONTROL SYSTEM ADJUSTMENT

#### 1-5-1. Microprocessor Clock (PAL) Adjustment (MP-31 Board)

| | |
|---|---|
| Mode | Stop |
| Measurement Point | Pin ① of IC608 |
| Measuring Equipment | Frequency counter |
| Adjusting Element | CV 601 |
| Specified Value | 4,433,619 ±10Hz |

Adjustment method:
1) Adjust with CV601 to 4,433,619±10Hz.

4,433,619±10Hz

Fig. 7-2.

#### 1-5-2. Microprocessor Clock (NTSC) Adjustment (MP-31 Board)

| | |
|---|---|
| Mode | Stop |
| Measurement Point | Pin ⑩ of IC 613 |
| Measuring Equipment | Frequency counter |
| Adjusting Element | CV 602 |
| Specified Value | 3,579,545±10Hz |

Adjustment method :
1) Adjust with CV602 to 3,579,545±10Hz.

3,579,545±10Hz

Fig. 7-3.

### 1-6. SERVO SYSTEM ADJUSTMENT

When adjusting the servo system, look out for the following items :

- Use the MD adjustment cable (J-6082-059-A).
- Adjust the CD servo system after the digital audio system adjustment is completed.
- When setting the tracking servo to the open state, set to the STOP state once and proceed to the next step.
- When the optical block is replaced, perform the adjustment in the following order.

**Note :** Start adjustment at maximum CD RF H level (RV108 fully counterclockwise direction).

1. LD Tracking Balance Adjustment
   1) Focus balance adjustment
   2) Tracking balance adjustment
2. LD Focus Gain Adjustment
3. LD Cross Talk Balance Adjustment
   1) TAN cam adjustment
   2) RAD-TILT adjustment
   3) Focus balance adjustment
4. LD Tracking Gain Adjustment
5. RD Adjustment
6. CD Focus Balance Adjustment
7. CD RF H Level Adjustment
8. CD RF L Level Adjustment

### 1-6-1. LD Servo System Adjustment

**1. LD Tracking Balance Adjustment (SV-33 Board)**

1) Focus balance adjustment

**Note :** Perform successively 1) and 2) adjustment in this order.

| Mode | Still |
|---|---|
| Signal | Frame 2201 (GRAY) (REF3P) |
| Measurement Point | MD adjustment cable [TRKG ERR (X)] (Pin ③ of CN105) |
| Measuring Equipment | Oscilloscope |
| Adjusting Element | RV102 |
| Specified Value | Maximum amplitude |

**Adjustment method :**

1) Select STILL (⏯) mode.
2) Search the frame 2201 (GRAY).
3) Turn the thread servo off. (MD adjustment cable SLED SW OFF)
4) Turn the tracking servo off. (MD adjustment cable TRKG SW OFF)
5) Adjust with RV102 so as to maximize the signal level.

1V/DIV 5msec/DIV

Fig. 7-4.

2) Tracking balance adjustment

| Mode | Still |
|---|---|
| Signal | Frame 2201 (GRAY) (REF3P) |
| Measurement Point | MD adjustment cable [TRKG ERR (X)] (Pin ③ of CN105) |
| Measuring Equipment | Oscilloscope |
| Adjusting Element | RV101 |
| Specified Value | A−B=0±0.1V |

**Adjustment method :**

**Note :** Perform successively this adjustment after "1) Focus balance adjustment" is completed.

6) Adjust with RV101 so that the center voltage of the tracking error signal becomes 0±0.1Vdc.
7) Select STOP (■) mode.
8) Turn the tracking servo on.
9) Turn the thread servo on.

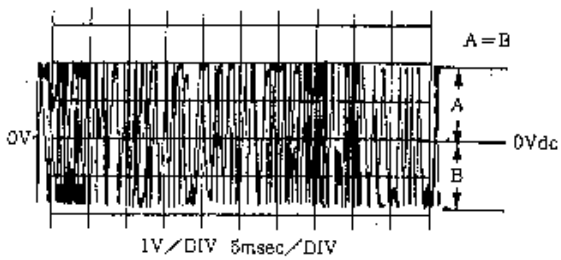
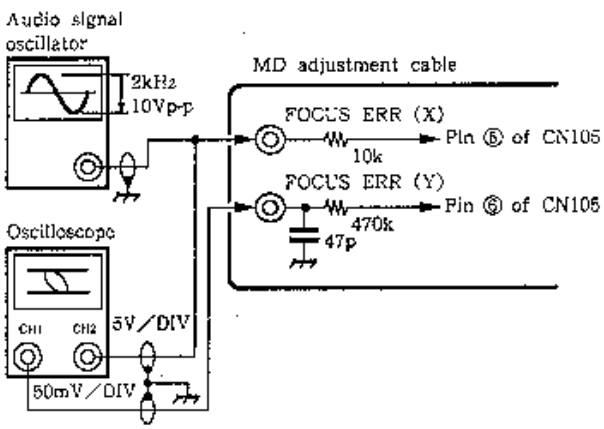



Fig. 7-5.

## 2. LD Focus Gain Adjustment (SV-33 Board)

| | |
|---|---|
| Mode | Playback |
| Signal | Frame 2201 (GRAY) (REF3P) |
| Measurement Point | MD adjustment cable<br>CH1 : [FOCUS ERR (Y)]<br>(Pin ⑥ of CN105)<br>CH2 : [FOCUS ERR (X)]<br>(Pin ⑤ of CN105) |
| Measuring Equipment | Oscilloscope (X-Y mode) |
| Adjusting Element | RV107 |
| Specified Value | See figure below |

**Connections :**




**Adjustment method :**

1) Search the frame 2201.
2) Adjust the waveform as shown in the figure below with RV107.

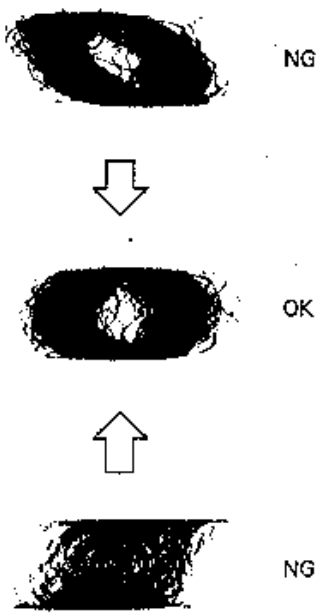



Fig. 7-6.

### 3. LD Cross Talk Balance Adjustment

1) TAN cam adjustment (MD)
The cam is always set to the initial position. When replacing the optical block and so on, set the cam to the mechanical center.*
*Mechanical center :
Marked with the notch of the cam located at the opposite side of the optical block chassis shaft.

**Adjustment method :**

1) Turn the TAN cam on the bottom (See Fig. 7-7.) with a hexagonal wrench.

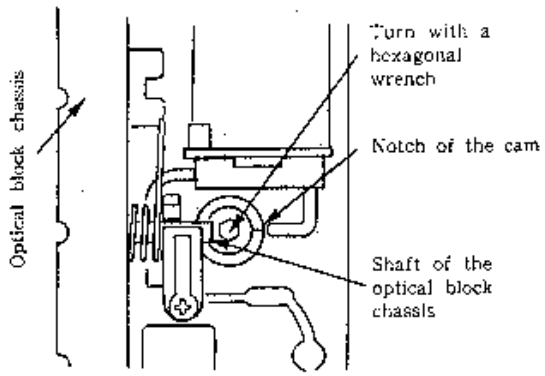


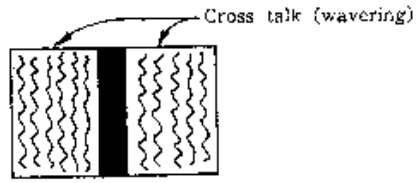

Fig. 7-7.

2) RAD TILT adjustment (SV-33 board)

| Mode | Still |
|---|---|
| Signal | Frame 767 (V BAR) (REF3P) |
| Measurement Point | Monitor TV |
| Measuring Equipment | Monitor TV |
| Adjusting Element | RV105 |
| Specified Value | Cross talk (wavering) with minimum as well as the same level. |

**Adjustment method :**

1) Select STILL (⏯) mode.
2) Search the frame 767 and apply a vertical bar signal.
3) Adjust with RV105 so that the rigth and left cross talks (wavering) become minimum as well as the level.




Adjust so that cross talks appeared on the both sides on the monitor display become minimum as well as the same level.

Fig. 7-8.

3) Focus balance adjustment (SV-33 board)

| Mode | Still |
|---|---|
| Signal | Frame 767 (V BAR) (REF3P) |
| Measurement Point | Monitor TV |
| Measuring Equipment | Monitor TV |
| Adjusting Element | RV102 |
| Specified Value | Cross talk (wavering) with minimum as well as the same level. |

**Adjustment method :**

1) Select STILL (⏯) mode.
2) Search the frame 767 and apply a vertical bar signal.
3) Adjust with RV102 to minimize the right and left cross talks (wavering) level.

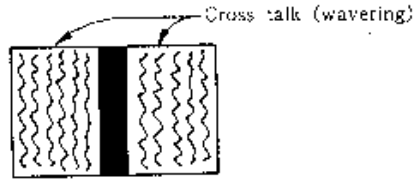
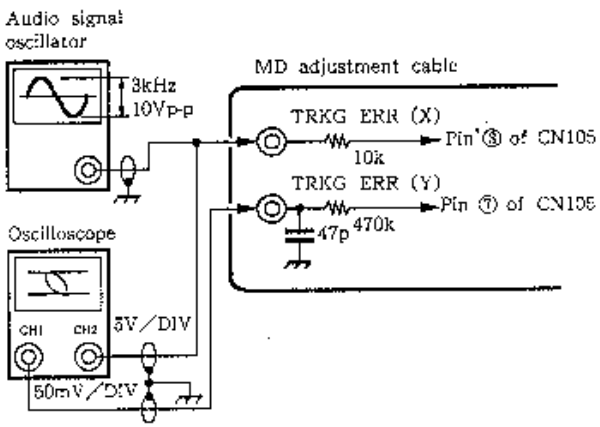



Fig. 7-9.

**4. LD Tracking Gain Adjustment (SV-33 Board)**

| | |
|---|---|
| Mode | Still |
| Signal | Frame 2201 (GRAY) (REF3P) |
| Measurement Point | MD adjustment cable<br>CH1 : [TRKG (Y)]<br>(Pin ⑦ of CN105)<br>CH2 : [TRKG (X)]<br>(Pin ③ of CN105) |
| Measuring Equipment | Oscilloscope (X-Y mode) |
| Adjusting Element | RV106 (TR GAIN) |
| Specified Value | See figure below |

**Connections :**




**Adjustment method :**

1) Search the frame 2201.
2) Adjust the waveform as shown in the figure below with RV106.

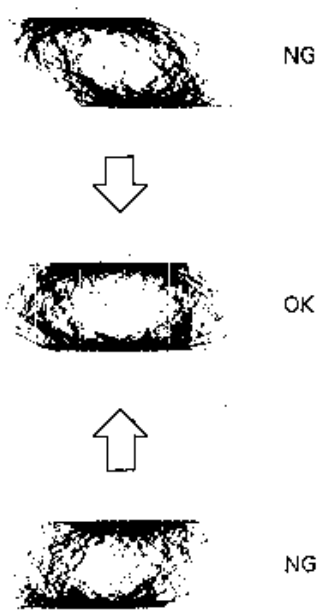



Fig. 7-10.

### 1-6-2. CD Servo System Adjustment

### 1. RD Adjustment

| | |
|---|---|
| Mode | Pause |
| Signal | Track No. 1, YEDS-18 |
| Measurement Point | MD adjustment cable<br>CH1 : [E terminal]<br>CH2 : [F terminal] |
| Measuring Equipment | Oscilloscope |
| Adjusting Element | RD Cam (MD) |
| Specified Value | A : B≦10 : 1 |

**Note :** 1) Turn off the monitor TV switch to prevent a noise.

**Note :** 2) Long continuation of the TRKG servo off state causes the spindle motor to stop.

**Adjustment method :**

1) Play back the track No. 1 and select PAUSE mode.
2) Turn the thread servo off. (MD adjustment cable SLED SW OFF)
3) Turn the tracking servo off. (MD adjustment cable TRKG SW OFF)
4) Turn RD cam on the MD and adjust so that it becomes as a straight line as possible.

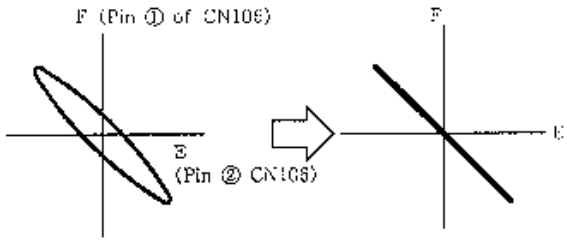



Fig. 7-11.

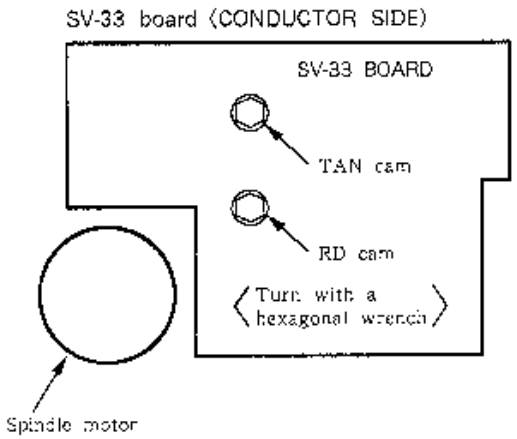



Fig. 7-12.

### 2. CD Focus Balance Adjustment (SV-33 Board)

| | |
|---|---|
| Mode | Playback |
| Signal | Track No. 1, YEDS-18 |
| Measurement Point | MD adjustment cable<br>[RF (CD) OUT]<br>(Pin ⑥ of CN106) |
| Measuring Equipment | Oscilloscope |
| Adjusting Element | RV103 |
| Specified Value | Maximum amplitude |

**Adjustment method :**

1) Play back the track No. 1.
2) Adjust with RV103 for maximum level.

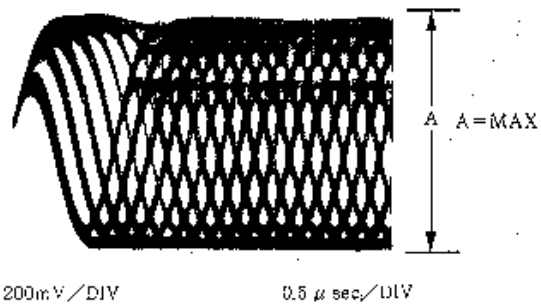



Fig. 7-13.

### 3. CD RF H Level Adjustment (SV-33 Board)

| | |
|---|---|
| Mode | Playback |
| Signal | Track No. 1, YEDS-18 |
| Measurement Point | MD adjustment cable [RF (CD) OUT] (Pin ⑥ of CN106) |
| Measuring Equipment | Oscilloscope |
| Adjusting Element | RV108 |
| Specified Value | 1.2±0.1Vp-p |

**Adjustment method :**

1) Play back the track No. 1.
2) Adjust with RV108 to 1.2±0.1Vp-p.

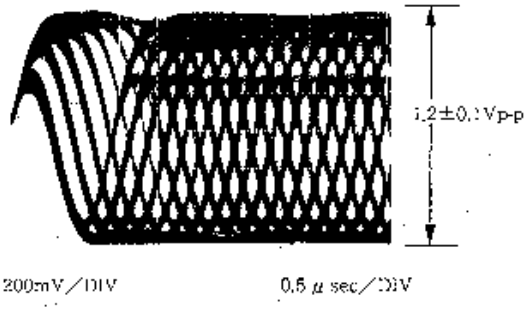



Fig. 7-14.

### 4. CD RF L Level Adjustment (SV-33 Board)

| | |
|---|---|
| Mode | Playback |
| Signal | Track No. 1, YEDS-18 |
| Measurement Point | MD adjustment cable [RF (CD) OUT] (Pin ⑥ of CN106) |
| Measuring Equipment | Oscilloscope |
| Adjusting Element | RV104 |
| Specified Value | Clear-cut waveform |

**Adjustment method :**

1) Play back the track No. 1.
2) Adjust with RV104 so that the waveform of lozenge-shaped portions becomes clear-cut and the waveform slant disappear from the rising edge portion.

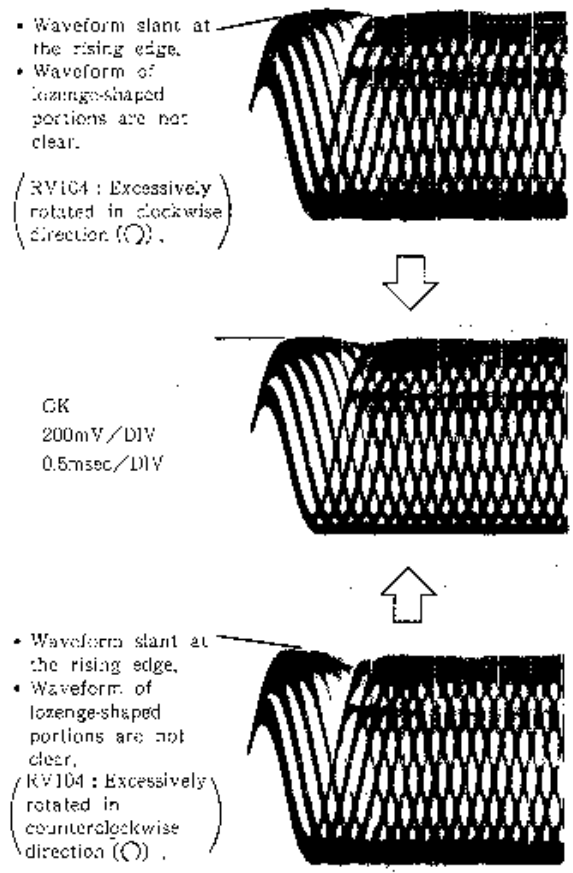

• Waveform slant at the rising edge.
• Waveform of lozenge-shaped portions are not clear.
(RV104 : Excessively rotated in clockwise direction (↻).)
OK
200mV/DIV
0.5msec/DIV
• Waveform slant at the rising edge.
• Waveform of lozenge-shaped portions are not clear.
(RV104 : Excessively rotated in counterclockwise direction (↺).)

Fig. 7-15.

## 1-7. VIDEO SYSTEM ADJUSTMENT

### 1-7-1. Video Output Level Adjustment (MP-31 Board)

| | |
|---|---|
| Mode | Still |
| Signal | Frame 3851(color bar) (REF3P) |
| Measurement Point | CNJ102<br>(VIDEO OUT terminal)<br>(Terminated to 75Ω) |
| Measuring Equipment | Oscilloscope |
| Adjusting Element | RV104 |
| Specified Value | 1.05 ±0.05Vp-p |

Adjustment method:

1) Select STILL (⏭) mode.
2) Search the frame 3851 and apply a color bar signal.
3) Turn RV104 to fully counterclockwise direction.
4) Adjust with RV104 to 1.05±0.05Vp-p on the first adjusting point at turning clockwise direction.

Fig. 7-16.

### 1-7-2. Burst Gate Position Adjustment (MP-31 Board)

| | |
|---|---|
| Mode | Still |
| Signal | Frame 3851(color bar) (REF3P) |
| Measurement Point | Pin ㉓ of IC111 |
| Adjusting Element | RV107 |
| Specified Value | 8.5±0.2 μsec. |

Adjustment method:

1) Select STILL (⏭) mode.
2) Search the frame 3851.
3) Adjust RV107 so that tw becomes 8.5±0.2 μsec.

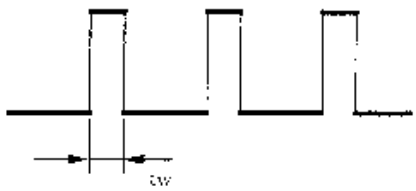



Fig. 7-17.

### 1-7-3. REF H Adjustment (MP-31 Board)

Note: Perform [Adjustment 1] and [Adjustment 2] in this order.

| | |
|---|---|
| Mode | Still |
| Signal | Frame 3851 (color bar) (REF3P) |
| Measurement Point | CH1:Pin ㉑ of IC111<br>External trigger:Pin ㉕ of IC111 |
| Measurement Equipment | Oscilloscope |
| Adjusting Elements | [Adj.1 ] RV108<br>[Adj.2 ] RV105 |
| Specified Value | [Adj.1 ] 85± 1 μsec<br>[Adj.2 ] 22± 1 μsec |

Connection:

- Appy 5.0Vdc to Pin ㊵ of IC111.

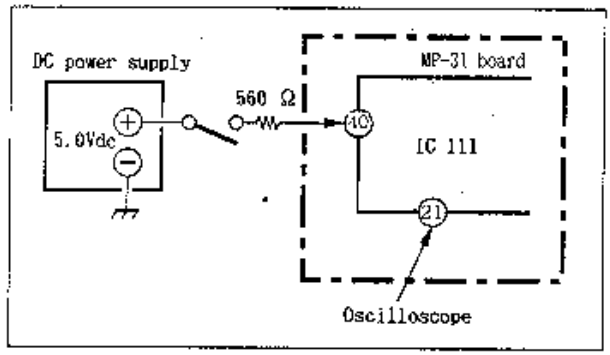



Fig. 7-18.

Adjustment method :

[Adjustment 1]

1) Select STILL (⏭) mode.
2) Search the frame 3851.
3) Connect the DC Power supply (5.0Vdc) to pin ㊵ of IC111.
4) Adjust with RV108 so that rising time difference between the pulse when the power (5.0Vdc) is on (LIM ON) and the trigger pulse (Pin ㉕ of (C111) is 85 ± 1 μsec.

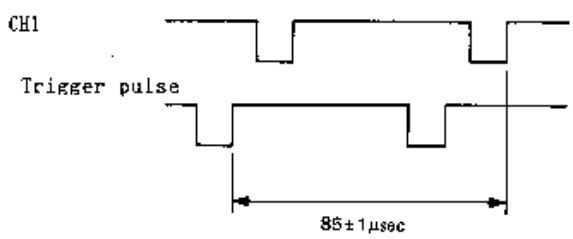
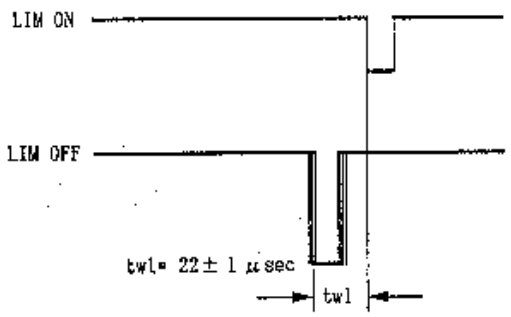



Fig. 7-19.

[ Adjustment 2 ]
1) Select STILL (⏯) mode.
2) Search the frame 3851.
3) Connect the DC Power supply (5.0Vdc) to pin ㊵ of IC111.
4) Adjust with RV105 so that time difference between when the power (5.0Vdc) is on (LIM ON) and when the power off (LIM OFF) is 22± 1 μsec.

Note : Since the waveform of LIM OFF is wavering, adjust at fits center position.

• Pin ㉑ of IC111 (CH1)




• Pin 25 of IC111 (Trigger pulse)

Fig. 7-20.

### 1-7-4. Color Framing Y Level Adjustment (MP-31 Board)

| Mode | Play back and Still |
|---|---|
| Signal | Frame 3851 (color bar) (REF3P) |
| Measurement point | CNJ102 (VIDEO OUT terminal) (Terminated to 75Ω) |
| Measuring Equipment | Oscilloscope |
| Adjusting Element | RV102 |
| Specified Value | A=B |

Adjustment method :
1) Search the frame 3851.
2) Equalize with RV102 Y levels on the playback mode and the still mode.

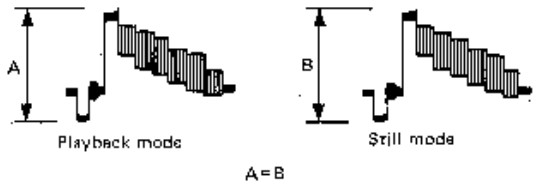



Fig. 7-21.

### 1-7-5. Color Framing Chroma Level (1) Adjustment (MP-31 Board)

| Mode | Still |
|---|---|
| Signal | Frame 3851 (color bar) (REF3P) |
| Measurement point | CNJ102 (VIDEO OUT terminal) (Terminated to 75Ω) |
| Measuring Equipment | Oscilloscope |
| Adjusting Element | RV103 |
| Specified Value | minimum |

Adjustment method :
1) Select STILL (⏯) mode.
2) Search the frame 3851.
3) Minimize with RV103 the shaking of green position.

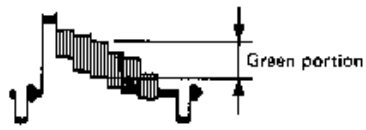


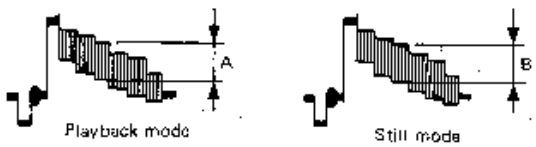

Fig. 7-22.

### 1-7-6. Color Framing Chroma Level (2) Adjustment (MP-31 Board)

| | |
|---|---|
| Mode | Play back and Still |
| Signal | Frame 3851 (color bar) (REF3P) |
| Measurement point | CNJ102 (VIDEO OUT terminal) (Terminated to 75Ω) |
| Measuring Equipment | Oscilloscope |
| Adjusting Element | RV101 |
| Specified Value | A=B |

Adjustment method :

1) Search the frame 3851.
2) Equalize with RV101 the green levels on the playback mode and the still mode.




A=B

Fig. 7-23.

### 1-7-7. Color Framing REF H Adjustment (MP-31 Board)

| | |
|---|---|
| Mode | Still |
| Signal | Frame 3851 (color bar) (REF3P) |
| Measurement point | PIN ④ of IC108 |
| Measuring Equipment | Oscilloscope |
| Adjusting Element | RV106 |
| Specified Value | tw= 112±5msec |

Adjustment method :

1) Select STILL (⏯) mode.
2) Search the frame 3851.
3) Adjust with RV106 so that tw is 112±5msec.

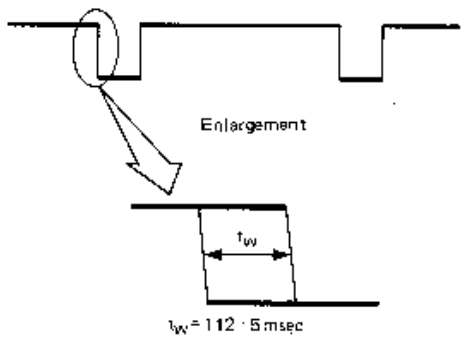



Fig. 7-24.

### 1-7-8. Input Level (PAL) Adjustment (RG-23 Board)

| | |
|---|---|
| Mode | Still |
| Signal | Frame 3851 (color bar) (REF3P) |
| Measurement point | PIN ㉔ of IC103 |
| Measuring Equipment | Oscilloscope |
| Adjusting Element | RV101 |
| Specified Value | 150±10mVp-p |

Adjustment method :

1) Select STILL (⏯) mode.
2) Search the frame 3851 .
3) Adjust with RV101 to 150±10mVp-p.

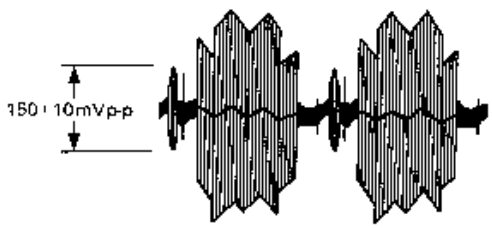



Fig. 7-25.

### 1-7-9. Input Level (NTSC) Adjustment (RG-23 Board)

| | |
|---|---|
| Mode | Still |
| Signal | Frame 4100 (color bar) (REF7) |
| Measurement point | PIN ㉔ of IC103 |
| Measuring Equipment | Oscilloscope |
| Adjusting Element | RV103 |
| Specified Value | 150±10mVp-p |

Adjustment method :

1) Select STILL (▶‖) mode.
2) Search the frame 4100.
3) Adjust with RV103 to 150±10mVp-p.

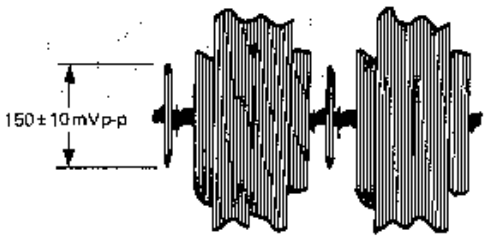



Fig. 7-26.

### 1-7-10. BF Position Adjustment (RG-23 Board)

| | |
|---|---|
| Mode | StilI |
| Signal | Frame 4100 (color bar) (REF7) |
| Measurement point | CH1:Pin ㉗ of IC 103<br>CH2:Pin ③ of IC103 |
| Measuring Equipment | Oscilloscope |
| Adjusting Element | RV107 |
| Specified Value | 5.6±0.5 μsec |

Adjustment method :

1) Select STILL (▶‖) mode.
2) Search the frame 4100.
3) Adjust with RV107 to 5.6±0.5 μsec.

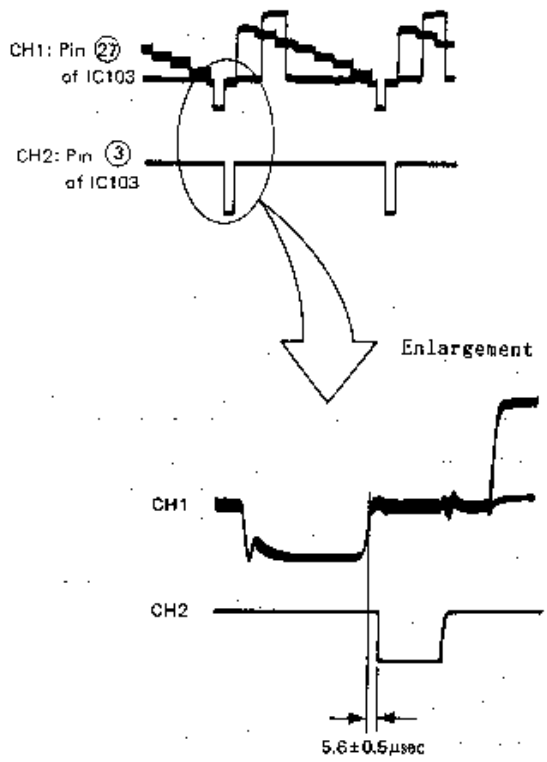



Fig. 7-27.

### 1-7-11. Video Level (NTSC) Adjustment (RG-23 Board)

| Mode | Still |
|---|---|
| Signal | Frame 4100 (color bar) (REF7) |
| Measurement point | CH1:Pin ⑤ of CN101<br>(Terminated to 75Ω) |
| Measuring Equipment | Oscilloscope |
| Adjusting Element | RV104 |
| Specified Value | 0.7±0.05Vp-p |

Adjustment method :
1) Select STILL (⏭) mode.
2) Search the frame 4100.
3) Adjust with RV104 to 0.7±0.05Vp-p.

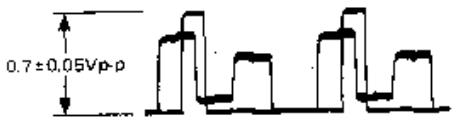



Fig. 7-28.

### 1-7-12. G Level Adjustment (RG-23 Board)

| Mode | Still |
|---|---|
| Signal | Frame 4100 (color bar) (REF7) |
| Measurement point | Pin⑥ of CN101<br>(Terminated to 75Ω) |
| Measuring Equipment | Oscilloscope |
| Adjusting Element | RV111 |
| Specified Value | 0.7±0.05Vp-p |

Adjustment method :
1) Select STILL (⏭) mode.
2) Search the frame 4100.
3) Adjust with RV111 to 0.7±0.05Vp-p.

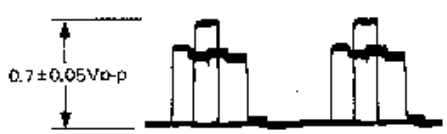



Fig. 7-29.

### 1-7-13. B Level Adjustment (RG-23 Board)

| Mode | Still |
|---|---|
| Signal | Frame 4100 (color bar) (REF7) |
| Measurement point | Pin⑦ of CN101<br>(Terminated to 75Ω) |
| Measuring Equipment | Oscilloscope |
| Adjusting Element | RV110 |
| Specified Value | 0.7±0.05Vp-p |

Adjustment method :
1) Select STILL (⏭) mode.
2) Search the frame 4100.
3) Adjust with RV110 to 0.7±0.05Vp-p.

Fig. 7-30.

### 1-7-14. Video Level (PAL) Adjustment (RG-23 Board)

| Mode | Still |
|---|---|
| Signal | Frame 3851 (color bar) (REF3P) |
| Measurement point | Pin⑤ of CN101<br>(Terminated to 75Ω) |
| Measuring Equipment | Oscilloscope |
| Adjusting Element | RV102 |
| Specified Value | 0.7±0.05Vp-p |

Adjustment method :
1) Select STILL (⏭) mode.
2) Search the frame 3851.
3) Adjust with RV102 to 0.7±0.05Vp-p.

Fig. 7-31.

### 1-7-15. Free-Run Frequency (PAL) Adjustment (RG-23 Board)

| Mode | Playback |
|---|---|
| Signal | Any Signal (REF3P) |
| Measurement point | Pin ⑭ of IC 103 |
| Measuring Equipment | Frequency Counter |
| Adjusting Element | RV108 |
| Specified Value | 4.433.619±15Hz |

Adjustment method :
1) Playback the REF3P disc.
2) Adjust with RV108 to 4.433.619±15Hz.

4,433,619±15Hz

Fig. 7-32.

### 1-7-16. Free-Run Frequency (NTSC) Adjustment (RG-23 Board)

| Mode | Playback |
|---|---|
| Signal | Any Signal (REF7) |
| Measurement point | Pin ⑭ of IC 103 |
| Measuring Equipment | Frequency Counter |
| Adjusting Element | CV102 |
| Specified Value | 3,579,545±15Hz |

Adjustment method :
1) Playback the REF7 disc.
2) Adjust with CV102 to 3.579,545±15Hz.

3,759,545±15Hz

Fig. 7-33.

### 1-7-17. Chroma Level Adjustment (RG-23 Board)

| Mode | Still |
|---|---|
| Signal | Frame 4100 (color bar) (REF7) |
| Measurement point | Pin⑦of CN101 (Terminated to 75Ω) |
| Measuring Equipment | Oscilloscope |
| Adjusting Element | RV105 |
| Specified Value | 0.53 ±0.03Vp-p |

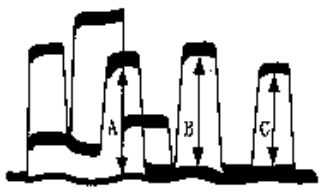
Adjustment method :
1) Select STILL (⏯) mode.
2) Search the frame 4100.
3) Adjust with RV105 to 0.53±0.03Vp-p.

Fig. 7-34.

### 1-7-18. HUE Adjustment (RG-23 Board)

| Mode | Still |
|---|---|
| Signal | Frame 4100 (color bar) (REF7) |
| Measurement point | Pin⑦of CN101 (Terminated to 75Ω) |
| Measuring Equipment | Oscilloscope |
| Adjusting Element | RV109 |
| Specified Value | A=B=C= 0.53±0.03Vp-p |

Adjustment method :
1) Select STILL (⏯) mode.
2) Search the frame 4100.
3) Adjust with RV109 to 0.53±0.03Vp-p.




A=B=C=0.53±0.03Vp-p

Fig. 7-35.

### 1-7-19. DL Amplifier Gain Adjustment (RG-23 Board)

| | |
|---|---|
| Mode | Still |
| Signal | Frame 3851 (color bar) (REF3P) |
| Measurement point | Pin⑤of CN101<br>(Terminated to 75Ω) |
| Measuring Equipment | Oscilloscope |
| Adjusting Element | RV106 |
| Specified Value | A=B= 0.53±0.03Vp-p |

Adjustment method :

1) Select STILL (⏯) mode.
2) Search the frame 3851.
3) Adjust with RV106 to 0.53±0.03Vp-p.

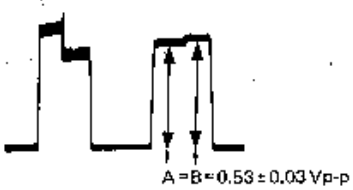



Fig. 7-36.

### 1-7-20. DAT Adjustment (RG-23 Board)

| | |
|---|---|
| Mode | Still |
| Signal | Frame 3851 (color bar) (REF3P) |
| Measurement point | Pin⑦of CN101<br>(Terminated to 75Ω) |
| Measuring Equipment | Oscilloscope |
| Adjusting Element | LV101 |
| Specified Value | A− B ≦30mV |

Adjustment method :

1) Select STILL (⏯) mode.
2) Search the frame 3851.
3) Adjust with LV101 to A− B ≦30mV.

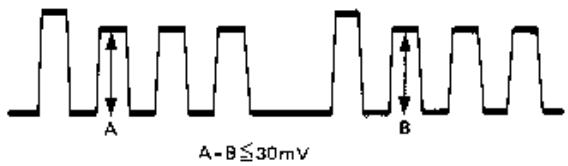



Fig. 7-37.

## 1-8. AUDIO SYSTEM ADJUSTMENT

### 1-8-1. Analog Audio System Adjustment (AF-52 Board)

1. Audio output level adjustment (XDP-6400/7400)

Note: Adjusting element of the Z/R channel is indicated in brackets [ ].

| Mode | Still |
|---|---|
| Signal | Frame 4301 (RAMP/1kHz) (REF3P) Frame 4301 (RAMP/1kHz) (REF7) |
| Measurement point | Audio output L/L [Z/R] terminal |
| Measuring Equipment | Audio level meter or Oscilloscope |
| Adjusting Element | RV701 (RV702) (NTSC) RV703 (RV704) (PAL) |
| Specified Value | Audio level meter: 500±25mVrms Oscilloscope : 1.4±0.07Vp-p |

Adjustment method :

1) Playback the REF7 disc.
2) Search the Frame 4301 (chapter 6)
3) Turn off the [CX] with remote commander. (Confirm that the indication on the front panel of the main unit is disappeared.)
4) Adjust with RV701 [RV702] to 500±25mVrms or 1.4±0.07Vp-p.
5) Playback the REF3P disc.
6) Search the Frame 4301 (chapter 6)
7) Turn off the [CX] with remote commander. (Confirm that the indication on the front panel of the main unit is disappeared.)
8) Adjust with RV703 [RV704] to 500±25mVrms or 1.4±0.07Vp-p.

2. Audio output level adjustment (XDP-440)

Note: Adjusting element of the Z/R channel is indicated in brackets [ ].

| Mode | Playback |
|---|---|
| Signal | Frame 4301 (RAMP/1kHz) (REF3P) |
| Measurement point | Audio output L/L [Z/R] terminal |
| Measuring Equipment | Audio level meter or Oscilloscope |
| Adjusting Element | RV701 [RV702] |
| Specified Value | Audio level meter: 500±25mVrms Oscilloscope : 1.4±0.07Vp-p |

Adjustment method :

1) Playback the REF3P disc.
2) Search the Frame 4301 (chapter 6)
3) Turn off the [CX] with remote commander. (Confirm that the indication on the front panel of the main unit is disappeared.)
4) Adjust with RV701 [RV702] to 500±25mVrms or 1.4 ±0.07Vp-p

### 1-8-2. Digital Audio System Adjustment (MP-31 Board)

| Mode | Stop |
|---|---|
| Measurement point | Pin ⑨ of IC803 |
| Measuring Equipment | Digital Voltmeter |
| Adjusting Element | RV801 |
| Specified Value | 0±0.2Vdc |

Connections:

Connect the chemical capacitor (1 μF or more) in between Pin ⑧ of IC803 (EFM) and GND.

Adjustment method :

1) Adjust with RV801 so that the voltage at Pin ① of IC803 is 0±0.2Vdc.

### 1-8-3. RF PLL Free-Run Adjustment (MP-31 Board)

| Mode | Stop |
|---|---|
| Measurement point | Pin ⑰ of IC803 |
| Measuring Equipment | Frequency counter |
| Adjusting Element | LV801 |
| Specified Value | 4.405±0.005MHz |

Connections:

Connect the chemical capacitor (1 μF or more) in between Pin ⑧ (EFM) of IC803 and GND.

Adjustment method :

1) Adjust with LV801 to 4.405 ±0.005MHz.

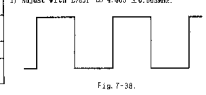


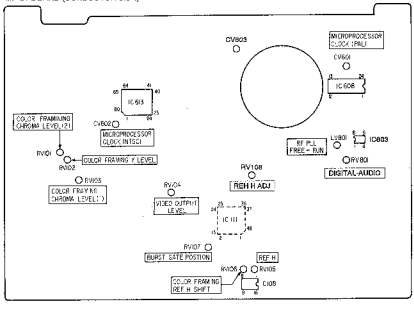
Fig. 7-38.

Note: If adjusting with a metallic screwdriver, a reading value may be altered. So use a ceramic screwdriver.

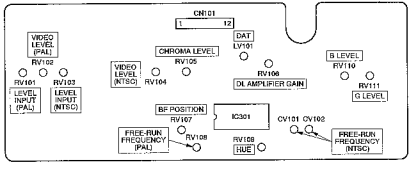


## ADJUSTMENT RELATED PARTS LOCATION

MP-31 BOARD (CONDUCTOR SIDE)




RG-23 BOARD (COMPONENT SIDE)






AF-62 BOARD

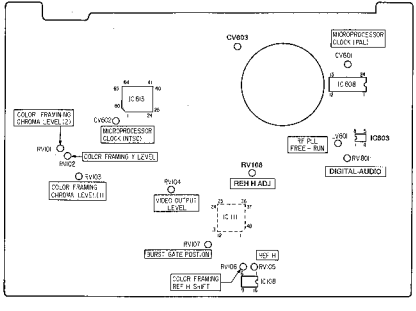
MD adjustment cable

RV101
LD tracking balance

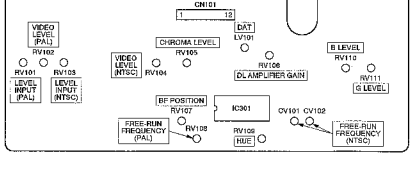
RV102
LD focus balance

## ADJUSTMENT RELATED PARTS LOCATION

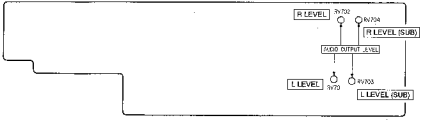
MP-31 BOARD (CONDUCTOR SIDE)



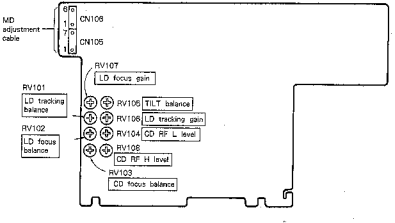

RG-23 BOARD (COMPONENT SIDE)

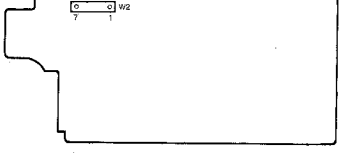



AF-52 BOARD (CONDUCTOR SIDE)




SV-33 board (CONDUCTOR SIDE)




FS-193 board (CONDUCTOR SIDE)